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MODERN PHARMACY AND THE MEDICAL PROFESSION*

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BOSTON

IT is unique in the meetings of your society for a representative of the pharmaceutical profession to address it. It was only a little more than a year ago — April 6, 1942, to be exact — that for the first time the American Medical Association and the American Pharmaceutical Association met in joint conference at Cleveland to discuss their mutual problems. It is, I believe, this conference that has led to the recent fuller recognition of the value of co-operation between the organizations of the two professions. Medicine and pharmacy have many common objectives, all revolving about the central theme, the preservation of the public health. Active co-operation of the professions will surely aid in accomplishing these objectives.

There is evidence that indicates the concern of each profession for the work of the other in their early days in Massachusetts. It is interesting to learn that the first pharmacist to locate in Massachusetts, Giles Firmin, was the father of the physician who delivered the first medical lectures in this locality.

Giles Firmin, Sr., came to this colony in 1633 from Sudbury, England, where he had practiced as an apothecary. His son, Giles, Jr., had come to this country in 1632 to practice medicine. The father was a valued member of the new community, serving as a selectman and as a deacon of the Boston church. His service was not long, however, as in less than a year he became ill and died.

Giles Firmin, Jr., practiced his profession in and around Ipswich, and it was he who delivered the first lectures in anatomy to students in this country. After some seven years of medical practice he decided that it was not sufficiently lucrative, so he undertook the study of theology. He wrote to John Winthrop about this decision, "I am strongly sett upon to studye divinitie, my studies else must be lost; for physick is but a meene help." It is recorded that he completed his studies in theology and returned to England, where he was ordained and settled as a rector. It is not recorded whether he found this occupation sufficiently lucrative, but presumably he did.

A study of the history of Massachusetts in the time of the Firmins reveals that pharmacy, medicine and theology were all highly regarded professions practiced by leaders in the community. The limitations of the practice of each profession were not sharply defined, and in those early times it seems that the pharmacists practiced medicine as well as pharmacy, the physicians practiced pharmacy as well as medicine, and the ministers practiced all three. The point to be emphasized is that the professions of pharmacy and medicine were very close to each other in these early days of Massachusetts.

If one continues to peruse the local history of the two professions, one discovers that the Massachusetts Medical Society made an outstanding contribution to pharmacy when on October 3, 1805, it voted to prepare a pharmacopoeia, which was published three years later. This was undoubtedly one of the events that stimulated the work resulting in the publication of the first edition of the *United States Pharmacopoeia* in December, 1820. The present twelfth revision of this publication is a striking example of accomplishment through the co-operation of the two professions.

The greatly increased interest in drugs and medicines and in uniform standards for them that accompanied the publication of the first *United States Pharmacopoeia* resulted in another important step in the progress of pharmacy in Massachusetts — the founding of the Massachusetts College of Pharmacy in Boston in 1823, the second such institution to be established in this country. This created a substantial basis for the future progress of the profession. Dr. Ephraim Eliot was the dynamic organizer and the first president of

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the institution, which was to become the largest college of pharmacy in the world.

In both medicine and pharmacy, education and training at that time were accomplished by the apprenticeship system. It was many years before a formal course of instruction was required for admission to their practice. This apprenticeship system, which may have been excellent in its time, became outmoded with the tremendous advances in the field of science. The professions in Massachusetts were slow in realizing this, and both medicine and pharmacy suffered from such tardiness in recognizing the obvious means by which they could continue to meet their obligations to the public. Medicine finally saw what should be done, and made the completion of a standard medical curriculum the minimum requirement for admission to its practice. Just at that point medicine in Massachusetts began to outdistance pharmacy, which until very recently has been forced to proceed without any such requirement. This has brought about the present condition in which we find that approximately half the practicing pharmacists of Massachusetts have not had the advantage of a good professional education and training in an accredited college of pharmacy. The "poor boy" or "Abraham Lincoln" argument has always been used to influence legislators to keep the requirements for admission to pharmacy as low as possible, in fact the lowest in the United States.

I cannot refrain from chiding the medical profession for its failure in past years to aid in securing sound legislation in the field of pharmacy. It was not until 1941 that a law was enacted that makes graduation from an approved college of pharmacy a prerequisite to admission to the licensing examinations. And even at that late date, at the public hearing held on the proposed legislation, a prominent member of the medical profession appeared against its enactment. The effective date of this law has not been reached, but it is to be hoped that the medical profession now recognizes the value of such legislation and will do all that it can to encourage its enforcement.

You may well ask how it is that without the benefit of favorable legislation the Massachusetts College of Pharmacy has been able to progress through the years and to become the largest college of pharmacy in the world. There are many reasons for this, but perhaps the most spectacular one is to be found in the biography of a prominent citizen of Boston.

It was during one of the final years of the Civil War that a seventeen-year-old boy whose father had been killed in the war came to Boston from the little town of Acton in search of a job. He was hired as office boy and clerk by the drug firm of Weeks and Potter. Showing remarkable ability and industry, he earned promotions rapidly, and in some nine years he became a member of the firm. His unusual business talent and keen judgment soon led him to organize the Potter Drug and Chemical Corporation, of which he became president. Meanwhile his investments in Boston real estate had grown until he became the city's largest taxpayer. His company became an international organization, and its products under the name of Cuticura were known in all parts of the world. This man, as you have doubtless surmised, was George Robert White.

In 1916, when the Massachusetts College of Pharmacy had outgrown its quarters at the corner of St. Botolph and Garrison streets, its alumni started a campaign for funds for a new building. Mr. White was interested in this campaign and its objective and, realizing that his great fortune had originated in the pharmaceutical field, he first subscribed $50,000 to the fund. Then, when the alumni had subscribed some $50,000 more, he became enthusiastic over the possibilities of the project and volunteered to assume the whole cost of the building. His offer was accepted and he personally supervised the construction of the main building of the college on Longwood Avenue, which reflects his artistic taste throughout its halls of marble and bronze. This building cost Mr. White somewhat more than $850,000.

In order that this fine structure might be permanently and properly cared for, Mr. White donated a valuable piece of downtown business property, the income from which could be expected to be ample for this purpose. Mr. White was not married, and when he died much of his fortune was left to his sister, Mrs. Bradbury. When Mrs. Bradbury died, she bequeathed $1,000,000 to the college to aid in ensuring that her brother's gift should be maintained and operated as he wished it to be. Thus the Massachusetts College of Pharmacy became the most richly endowed college of pharmacy in the world and has been enabled to offer superior courses of instruction at a moderate cost to its students. It has made it possible for the poor boy as well as the boy of financial means to secure an excellent education and training for the practice of pharmacy.

Pharmaceutical education has made marked and substantial progress during the last twenty-five years, leaving behind it the outgrown apprenticeship and preceptorship, just as did medical education in previous years. The regular undergraduate curriculum of the colleges of pharmacy, as the result of long, careful study and development, is now one of four years and of at least thirty-two hundred hours of intensive classroom and laboratory work. The outline of the curriculum is re-

vised and published under the title, *The Pharmaceutical Syllabus*, and this is respected by educators as a work that is based on an excellent foundation. The content of the curriculum has been derived functionally from a study of the needs of the profession.

Pharmacy today is one of the most important agencies engaged in the preservation of the public health. Its responsibility is to prepare and make available all the medicines, new and old, that the medical profession may require in the scientific treatment of disease, or that may be safely employed by the public as household remedies. In order to discharge this responsibility, a tremendous modern industry has been established requiring pharmacists educated and trained to take their places in manufacturing plants, research laboratories and governmental inspection bureaus, in addition to the distribution outlets such as the thousands of drugstores, the hospitals and the public dispensaries. The modern practice of pharmacy requires a modern education and training in a college of pharmacy that has adequate facilities for its work, comparable to those of the medical school in its field. The pharmaceutical curriculum has been developed with full consideration of these responsibilities and requirements.

First, it is recognized that a good background of knowledge of chemistry is essential for those who would practice pharmacy intelligently. The curriculum provides for this with full courses in inorganic chemistry, organic chemistry, analytical chemistry, qualitative and quantitative, both gravimetric and volumetric, and finally biochemistry. These courses constitute a major subject for the student. Secondly, it is recognized that an equally good background of knowledge of biological science is necessary. This is furnished through full courses in zoology, botany, physiology and bacteriology. Thirdly, there are the courses in pharmacognosy, pharmacology and public health, in which the knowledge of chemistry and the biologic sciences is applied directly to the study of drugs. Fourthly, the curriculum has a large group of courses that apply all the previously mentioned divisions of knowledge to the actual preparation of medicines. These are the courses designated under the title of pharmacy, with dispensing pharmacy as the culmination of all of them. This group of courses, as would be expected, constitutes another major subject. Finally, there are included sufficient courses in English, physics and mathematics to enable the student to carry on his studies satisfactorily.

A student who completes this curriculum has the basic education and training required to enter the practice of the profession, but in addition nearly all states require at least a year of supervised practice or internship before entrance to the state licensing examinations. The student who wishes to specialize in some particular phase of the practice may continue his studies in the colleges, take graduate courses, engage in research and earn the highest of graduate degrees.

Even from this brief résumé of the principal features of the pharmaceutical curriculum, it may be readily concluded that modern pharmaceutical education is comprehensive, carefully planned and worthy of the profession for which it prepares practitioners. Further, it may be concluded that these practitioners are educated and trained to assume their share of the great responsibility of those engaged in the preservation of health.

More than ever before, the profession of pharmacy is prepared to render the following services that are of particular interest to the members of your society: to have available in every community an adequate supply of high-standard drugs and medicines; to have available the knowledge, skill and equipment necessary for the extemporaneous preparation of medicines prescribed by the medical profession; to have available such a knowledge of the drugs and medicines that, through proper advice, the dangers of misuse may be averted; to have available accurate and reliable information about public health; to participate in research so that new and improved medicinal agents may be made available to the medical profession.

It is on this last division of service that I should like to comment briefly. When one thinks of research, one is inclined to think of the great foundations devoted to it or of the large manufacturers' laboratories that have come into prominence in this field. Seldom does one dwell on the possibilities of research in connection with the everyday dispensing of prescribed medicines. Yet this form of research, so helpful to the physician and his patient, is a part of the service that modern pharmacy provides, as well as the major research of the large laboratories.

In order to acquaint the members of your society with the scope of this service, the Massachusetts State Pharmaceutical Association, with the cooperation of the Massachusetts College of Pharmacy, is conducting a professional exhibit at this meeting where you may see some of the results of this work. In it you may have observed how a sticky, black tar ointment may be prepared so that it can readily be removed from the skin with warm water, when its removal is desirable. You may have seen how the ordinary sulfur lotion can be prepared so that the particle size of the sulfur is extremely small and the chemical is thus made more effective. You may have tasted or tried the

odor of syrup of orange so prepared that it has the attractive, aromatic qualities of the fresh fruit. You may have noticed the solutions for the eye, prepared so that they are isotonic with lachrymal secretions and thereby more satisfactory for use. You may have seen a group of medicines made so that the diabetic patient can take them without difficulty. All these and other medicines in this exhibit are the results of pharmaceutical experimentation and research in connection with the improvement of medicines that you may frequently prescribe.

Colleges of pharmacy are offering this service and are educating and training their students so that they may provide it for the medical profession. Through refresher courses, the colleges are also endeavoring to inform practicing pharmacists of the improvements in compounding that have been discovered, so that they may make use of them.

* * *

In this brief outline of some of the features of modern pharmacy I have attempted to take you "behind the scenes" of the practice, showing you some of the factors that have retarded its progress and some that have aided it. I have endeavored to show you the objectives of the practice and the nature of the preparation of the practitioners who are expected to accomplish these objectives. I have told you of these things because unfortunately they are not obvious even to many within our own profession. But there are strong forces at work in the right direction, and this direction is definitely toward true co-operation in the preservation of the public health.

With more than 20 per cent of the members of both our professions in military service, the care of the civilian population is a job that can be well done only by co-operative effort; and the same is true of the planning for their care in the postwar period. Both the present war and the future peace dictate the necessity for full co-operation among the medical and related health services.

To the professions of medicine and pharmacy in Massachusetts I commend the motto *Alterum alterius auxilio eget* [Each needs the help of the other].

STUDY ON EFFECTIVENESS OF DIETARY CONSULTATION*

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PHILADELPHIA

THIS study was undertaken in 1942 among private patients in order to determine the effectiveness of dietary consultation in the correction of poor habits of diet. Eighty-five adult patients, both male and female, of varying ages, selected at random, were chosen for study.

For each of the patients, there was compiled a dietary history that included a record of food habits, dislikes, intolerances and cravings. In addition, each patient was instructed to record his weekly food intake at two different periods. The purpose in having these two questionnaires filled out was, first, to determine the value of dietary consultations and, second, to study food habits. The questionnaire contains a detailed list of types of food, with spaces for the kind and amount for each meal, as well as blanks for food and drinks taken between meals. Notes explain how the amounts are to be recorded, and additional questions cover how foods such as meat, fish, eggs and vegetables were prepared and what amounts of salad dressing were used. Each patient was given seven such sheets, one for each day, on which to record dietary intake during one week. The first questionnaire was given to the patient at his first visit, and he was shown how to fill it out, meal by meal. When the patient returned the completed food questionnaire, it was reviewed with him, with careful attention to whether the food intake was recorded properly. The patient was then given a proper diet, adapted to his needs and based on the dietary pattern revealed in his week's record. In other words, we used as the building stones for the new diets the former good food habits and, whenever necessary, substituted good food habits for the faulty ones.

A few weeks later, the patient was given the second questionnaire, which he was requested to keep for one week, as he had done previously, recording everything consumed even if all suggestions for dietary improvement had not been followed. When this was returned, dietary suggestions were again made to the patient. It is interesting that, in the case of the second questionnaire, the patients were not nearly so co-operative as with the first. Many were reluctant to record their weekly food intake for a second time, an attitude that we interpret as a challenge

*This study was made possible by a grant from the White Laboratories, Incorporated, Newark, New Jersey.

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to improve our technic and means of approach, so that patients will appreciate an opportunity to have a second review of their diets.

In this study, inasmuch as the food consumed was not weighed but expressed in household measures, the dietary findings are not completely accurate and are approximated. However, we believe we have obtained a true picture of each patient's dietary pattern.

The dietary records were computed to determine their values in protein, calories, vitamins, calcium, phosphorus, iron, acid-base, fiber and water. The method used in scoring the diets was the same as reported in our previous study.[1] We did not compute the dietary amounts of fat and carbohydrate, or of minerals and vitamins, other than those for which human requirements have been established, since the Food and Nutrition Board of the Na-

TABLE 1. *Dietary Findings among 85 Patients, before and after Consultation.*

Dietary Finding	Before Consultation		After Consultation	
	No. of cases	Per-centage	No. of cases	Per-centage
Deficiency of protein:				
Less than 10%	5		1	
10–19%	15		5	
20–29%	8		1	
30–39%	4		0	
40–49%	2		0	
50% or more	1		0	
	35	41	7	8
Deficiency of calories:				
Less than 20%	17		16	
20–29%	14		21	
30–39%	17		16	
40–49%	10		4	
50% or more	8		1	
	66	77	58	68
Excess of calories:				
Less than 20%	2	2	0	
Deficiency of vitamin A:				
Less than 10%	4		3	
10–19%	7		2	
20–29%	12		1	
30–39%	3		1	
40–49%	3		0	
50% or more	2		0	
	31	36	7	8
Deficiency of vitamin B_1:				
Less than 10%	3		2	
10–19%	6		7	
20–29%	15		18	
30–39%	16		13	
40–49%	16		13	
50% or more	24		3	
	80	94	56	66
Deficiency of riboflavin:				
Less than 10%	1		2	
10–19%	7		8	
20–29%	2		9	
30–39%	8		7	
40–49%	12		7	
50% or more	39		8	
	69	81	41	48
Weekly range of niacin:				
Less than 35 mg.	35	40	20	23
35–69 mg.	45	53	48	56
70 mg. or more	6	7	17	20
Deficiency of ascorbic acid:				
Less than 10%	0			
10–19%	1			
20–29%	3			
30–39%	1			
40–49%	0			
50% or more	6			
	11	13	2	2

Dietary Finding	Before Consultation		After Consultation	
	No. of cases	Per-centage	No. of cases	Per-centage
Deficiency of calcium:				
Less than 10%	1		3	
10–19%	6		1	
20–29%	6		4	
30–39%	8		3	
40–49%	8		2	
50% or more	12		1	
	41	48	14	17
Deficiency of phosphorus:				
Less than 10%	4		2	
10–19%	7		0	
20–29%	2		1	
30–39%	6		0	
40–49%	2		0	
50% or more	1		0	
	22	26	3	4
Deficiency of iron:				
Less than 10%	4		3	
10–19%	8		3	
20–29%	3		2	
30–39%	8		0	
40–49%	5		0	
50% or more	1		0	
	29	34	8	9
Acid-base imbalance:				
More acid than base	4	5	2	2
More base than acid	74	87	75	88
Deficiency of water:				
Less than 20%	9		9	
20–29%	18		14	
30–39%	11		9	
40–49%	12		7	
50% or more	13		4	
	63	74	43	50
Excess of water:				
Less than 20%	0		0	
20–29%	0		2	
30% or more	1		1	
	1	1	3	4
Deficiency of fiber:				
Less than 10%	15		3	
10–19%	14		13	
20–29%	20		12	
30–39%	5		6	
40–49%	3		1	
50% or more	2		5	
	59	70	40	46
Excess of fiber:				
Less than 10%	5		0	
10–19%	3		3	
20–29%	4		1	
30–39%	2		0	
40–49%	1		0	
50% or more	1		1	
	16	19	5	6
Eating between meals*	18	21	19	22
Unequal division of calories among meals	43	50	20	24

*Other than fruit, fruit juices and milk, which do not interfere with appetite.

tional Research Council has not recommended optimum daily allowances for these nutrients.

We then classified the data on these 85 patients to determine how many diets were deficient, before and after consultation, in protein, calories and so forth (Table 1). In the case of niacin (nicotinic acid), we have merely given the number of diets that fell into certain numerical ranges, since data are not available for the niacin content of all foods.

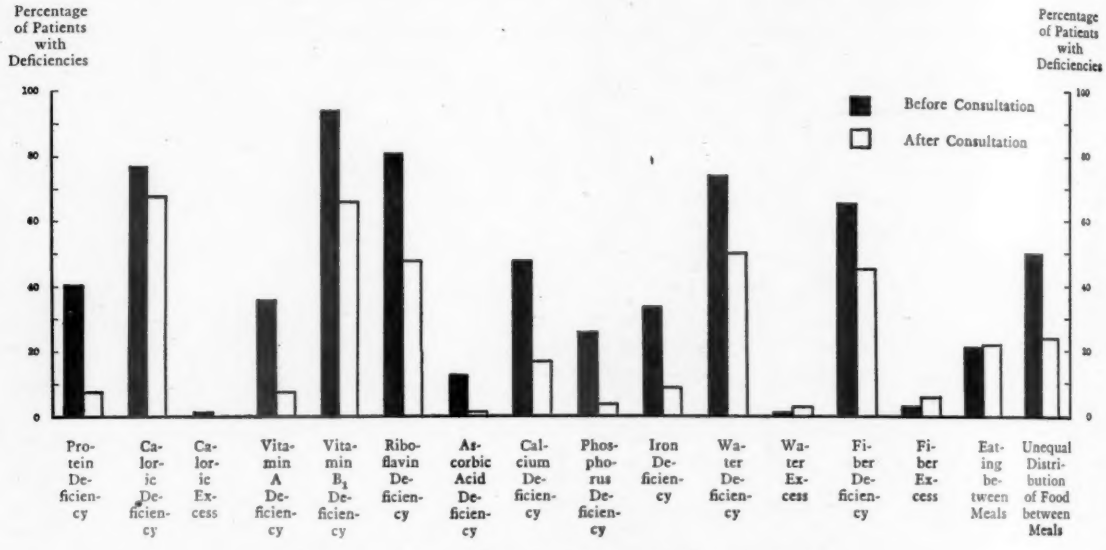

FIGURE 1. *Dietary Pattern before and after Consultation.*

RESULTS

Figure 1 illustrates the improvement in diets after consultation. In all but 8 cases the final dietary pattern was better than the original. Four of the patients whose dietary pattern was not improved by consultation were on reducing and diabetic diets and failed to adopt the dietary recommendations because of previous alcoholism and a craving for rich desserts. Another patient had a respiratory infection and could not follow the suggestions; another, who had cerebral arteriosclerosis, did not understand the therapeutic diet; still another was emotionally disturbed and had phobias regarding the consumption of rare meat (one of the "high-emotional foods"), and of vegetables unless puréed; and the remaining patient was old, with an unchangeable dietary pattern that included the consumption of too few vegetables and too much alcohol.

Interesting was the fact that the male patients co-operated more than did the female patients in submitting the second set of questionnaires. Moreover, those who were intent on gaining weight seemed to follow more of the dietary suggestions than did any other group, probably because they had been chronically ill and wished to correct their inefficiency in the daily pursuit of their duties.

We also considered it worth while to determine from the two series of questionnaires how many patients daily consumed a pint of milk, one serving of meat and so forth (Table 2). In short, we were interested in knowing how many patients' diets conformed to the dietary yardstick of the Food and Nutrition Board of the National Research Council, as well as determining several other points of general import.

TABLE 2.

CONSUMPTION	BEFORE CONSULTATION		AFTER CONSULTATION	
	NO. OF CASES	PERCENTAGE	NO. OF CASES	PERCENTAGE
1 pint of milk daily	28	33	68	80
1 serving of meat, fish or poultry daily	61	72	78	91
2–3 slices of whole wheat or enriched bread (or its equivalent in cereal) daily	24	28	73	86
2–3 tbsp. of butter, cream or fortified oleomargarine daily	53	62	69	81
2 servings of vegetables daily	66	78	82	96
2 servings of fruits (one citrus) daily	57	67	80	94
3–5 eggs weekly	42	50	67	79
More than 1 cup of coffee or tea daily	50	59	20	23
Alcohol regularly	14	17	5	6
Many rich desserts	45	53	23	27

The various reasons why our patients did not eat enough of the essential nutrients include allergies, ignorance of the importance of particular

foods, indigestibility of a food, constipating or laxative effect of a food, adherence to food fads, supposition that certain foods are fattening and so forth.

In this respect, the survey made by the Committee on Food Habits[2] regarding reasons for lack of consumption of meat is pertinent. Twenty-one per cent of 5200 subjects questioned, representing a cross section of Americans, thought meat hard to digest; 50 per cent thought some or all meat fattening.

Likes and dislikes of foods are influenced by economic background, esthetic training, traditional conflicts, national, regional, religious and age differences and differences in child-training.[3] Why certain persons like one kind of food that is disliked by others is a matter that should concern the clinician and nutritionist interested in improving the nutritional status of those whom they encounter.

Even though 8 of the patients studied did not respond well to nutritional suggestions, the results may be considered good, for in 77 of 85 subjects dietary improvement followed consultation. It is significant that the patients were adults of varying ages many of whose food habits had existed for a long time, since most adult eating habits are extensions of habits formed in earlier years, usually in childhood. According to Dorcus,[4] "Why one eats or does not eat certain foods and how these habits are modified are questions that raise problems having ramifications that lead ultimately into at least five distinct fields of psychology — physiological, social, comparative, abnormal and that concerned with the process of learning." Today the clinician, being more and more concerned with the psychology factor — since psychogenic disturbances cause so many ills — should record the patient's food dislikes and intolerances and attempt to discover whether the cause is somatic or psychologic. In endeavoring to change food habits, one should realize that the selection of food is determined by its taste, by its ability to meet a physiologic need and by its novelty.

The results of this study show the importance of the patient's keeping a dietary record that will be reviewed by the physician. We do not consider it important that a second set of questionnaires be submitted. From time to time, it may be worth while for the physician to check the patient's diet to make certain that the changes previously suggested have been put into practice. In fact, such periodic interrogation doubtlessly acts further to encourage patients to correct faulty food habits.

Summary and Conclusions

In this study of 85 private patients the prevalence of dietary deficiencies was compared before and after dietary consultation, in order to determine the effectiveness of consultation and to study the food habits of the patients. In all but 8 cases the dietary pattern was improved after consultation. In spite of a second dietary check-up, however, there were still many dietary deficiencies, although the number had decreased considerably. Interestingly, the patients who were underweight were the most co-operative of all those studied.

Although this study was done on only 85 patients, we are convinced that dietary consultations, with check-ups from time to time, are advisable in formulating a good basic diet and in substituting good food habits for faulty ones.

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POTASSIUM SULFOCYANATE THERAPY IN ESSENTIAL HYPERTENSION*

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BOSTON

ANY drug whose therapeutic efficacy has been discovered, discredited and rediscovered[1–4] for forty years, and which is today widely used but is not yet included in *New and Nonofficial Remedies*, bears careful scrutiny, especially since its pharmacology is a subject of some dispute.[4] Our experience with potassium sulfocyanate therapy covers the past thirteen years.[5] Without reference to blood levels, the drug when first used was cautiously pushed to obtain a hypotensive action. A satisfactory fall in the blood pressure was regularly obtained in about a third of the patients under well-controlled conditions.[5] By careful follow-up, toxic reactions were kept minimal in number, although they were at times severe in single cases. The hypotensive action was dependent on continuous exhibition of the drug. Because of the inconvenience of meticulous follow-up and the less than 50 per cent hypotensive effectiveness, potassium sulfocyanate was not regularly used until Barker[4] and Wald[6] pointed out the possibility of controlling the relation between toxic and therapeutic effects by following the blood cyanate level.

During the past five years we have followed 100 patients on sulfocyanate therapy for periods varying from a few months to four years. The sex distribution was 62 females and 38 males. The age range was from thirteen to sixty-eight years, 61 per cent of the patients being between thirty and fifty years of age and 20 per cent between fifty and sixty years; 12 per cent were under thirty, and 7 per cent were over sixty.

The patients were classified as Grade I (41 per cent), Grade II (37 per cent), Grade III (14 per cent) and Grade IV (8 per cent), on the following basis:

Grade I (early or mild): There is variable hypertension, the blood pressure ranging from 150 to 200 systolic and from 100 to 120 diastolic, in 23 per cent of cases falling to normal levels (140 systolic, 90 diastolic, or less) with rest or sedatives, and occasionally under stress going above the limits noted. The fundi show minimal, if any, changes, as represented by narrowing of arterioles. The heart or kidneys show minimal, if any, changes.

Grade II (moderate): There is variable hypertension, the blood pressure ranging from 170 to 250 systolic and from 110 to 130 diastolic, usually at the lower levels, occasionally even lower, but in 11 per cent of cases falling to normal with rest or sedatives. The fundi show arteriovenous compression, narrowing, and caliber changes in the arterioles. The heart shows slight enlargement or prominence in the region of the left ventricle up to moderate enlargement, but no symptoms or signs of actual or impending failure. The urine shows no change or a slight grade of albuminuria and minimal numbers of formed elements in the sediment. The renal function is normal or slightly impaired by concentration and intravenous phenolsulfonephthalein tests.

Grade III (late benign): There is variable hypertension, with the blood pressure almost always over 170 systolic and 110 diastolic, but in 8 per cent of cases falling to normal levels. The fundi show arteriovenous compression, caliber changes in the arterioles, wide light reflexes and exudates or hemorrhages in the retinas. The heart is usually enlarged, often with symptoms of congestive or anginal failure. The urine often shows albumin and casts. The renal function is often impaired, but actual failure (uremia) is unusual. Cerebral accidents sometimes occur. This grade of hypertension is as a rule of many years' standing.

Grade IV (malignant): The blood pressure, especially the diastolic, is usually very high. The symptoms are often of recent onset in a patient almost always under fifty and often under forty, the cardinal signs being edema of the optic disks, with or without exudate and hemorrhage. Cardiac enlargement and congestive or anginal heart failure are often present. Renal impairment and failure are common.

All studies were completed at the initial and subsequent visits during the first one to three months. During this time therapeutics was confined to rest, mild sedation, — usually ¼ gr. of phenobarbital four times daily, — diet — often restricted fat and salt — and simple psychotherapy. The last cannot be stressed too much. Close interest was taken in the patient's problems and future. Rather than a brief, general reassurance, an attempt was made to instill doubt into the patient's minds about the fears for his future with which he had been as a rule preoccupied. An optimistic and hopeful attitude on the part of the physician usually engendered the same attitude in the patient. These efforts in 40 per cent of the cases resulted in a fall of 10 to 50 in the systolic pressure and 10 to 30 in the diastolic pressure.

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After this initial period of rest, sedative, diet and psychotherapy, potassium sulfocyanate (5 gr. one to three times daily) was prescribed, and the blood level was checked at weekly to monthly intervals and, after an established tolerance, once in one to three months. Toxic reactions were carefully explained, the usual ones being written down for the patient's reference.

Taking the group as a whole, an excellent hypotensive action (a fall in blood pressure to below 150 systolic and below 100 diastolic) was obtained in 12 per cent of the cases. A sustained decrease of 30 to 50 systolic and 20 to 30 diastolic was obtained in an additional 16 per cent. Thus, 28 per cent of the cases showed a definite hypotensive action in addition to any fall as a result of diet, rest, sedatives and psychotherapy during the initial period. A hypotensive effect was more frequent in females (32 per cent) than in males (21 per cent). The favorable effects occurred in the different grades of hypertension as follows: Grade I: 14 of 41 patients (34 per cent); Grade II: 8 of 37 patients (21 per cent); Grade III: 3 of 14 patients (21 per cent); and Grade IV: 3 of 8 patients (38 per cent).

The most notable observation in this series was the additional symptomatic improvement from potassium sulfocyanate therapy after the usual regime of rest, diet, sedative and psychotherapy. This symptomatic improvement occurred in 53 per cent of the cases, and was greatest in Grade I hypertension. The commonest symptom and the one most effectively relieved was headache, usually hemicrania of the migraine type. Often intractable headache unaffected by other measures was brought under control. Other subjective sensations relieved were dizziness, lightheadedness and faintness, such relief being accompanied by an improvement in well-being.

Approximately 20 per cent of the patients exhibited toxic effects, for the most part mild, the females showing such effects in a higher percentage (28 per cent) than the males (17 per cent). Patients were repeatedly instructed to omit the drug on the appearance of any untoward subjective sensation. As a result, the blood cyanate level was often lower than the optimum therapeutic level specified by Barker and others.[4, 7] Nevertheless, toxic manifestations were kept at a minimum and were inconvenient rather than serious, and maximal symptomatic relief was as commonly obtained with blood levels of less than 8 mg. per 100 cc. as with those above 8 mg. Of the patients not obtaining additional symptomatic relief from potassium sulfocyanate, the majority received the drug in sufficient dosage to obtain a blood cyanate level of 8 to 12 mg. per 100 cc. and frequently higher.

The hypotensive action of the drug occurred at blood levels less than 8 mg. per 100 cc. in slightly over half the cases showing this reaction. Frequently the hypotensive action was as marked at lower levels as it was when the level was 12 mg. or even higher. On the other hand, of the patients showing no significant response in the blood pressure, 40 per cent showed maximum blood cyanate levels of 8 mg. or more and 18 per cent levels of over 12 mg.

The following is an abstract of a case showing a typical hypotensive effect.

Case Report

R. D. (M. G. H. U-256413), a 35-year-old man, was first seen on June 24, 1940, with complaints of headache, blurring of vision and edema of the ankles. The blood pressure was 190/120. The heart was enlarged, with a gallop rhythm. There was dyspnea on exertion. Paroxysmal nocturnal dyspnea with red-streaked sputum had been present for 3 months. The patient had had acute glomerulonephritis 9 years previously. At later visits, over a period of 3 months on phenobarbital, digitalis and aspirin, the blood pressure varied from 190 to 220 systolic and from 110 to 130 diastolic. On this therapy, headaches continued to be almost incapacitating. Potassium sulfocyanate therapy (5 gr. daily) was begun after 3 months on other therapeutic measures that caused no reduction in blood pressure and no relief of the headaches. At the following visit 2 weeks later, there was no reduction of blood pressure, but there had been no headaches. The blood cyanate level was 3.8 mg. per 100 cc.

Over a period of 1 year on potassium sulfocyanate, the blood pressure fell gradually from 210/140 to 140/110 (Fig. 1). At no time was the blood cyanate level over 8.3 mg. per 100 cc. At the end of that time, however, great enlargement of the thyroid gland was noted.

The patient was admitted to the hospital and studied exhaustively by the Thyroid Clinic. There was lid lag. The thyroid gland had a very hard consistence. The basal metabolic rate varied from −13 to −17 per cent. Slight exophthalmos was noted. There were a thrill and a bruit over the gland. The patient complained of excessive sleepiness. Biopsy showed an extremely hyperplastic and extremely vascular gland.

At that time potassium sulfocyanate was withdrawn. Two weeks after withdrawal the headaches were severe, and the blood pressure had risen to 172/122. Aspirin failed to control the headaches. In 1 month the thyroid gland was distinctly smaller, and in 2 months no goiter was palpable and the basal metabolic rate was +6 per cent.

Four months after potassium sulfocyanate was discontinued it was recommenced. The headaches at once improved at a blood cyanate level of 4.2 mg. per 100 cc. In 1 month the blood pressure had fallen from 172/122 to 142/98, but the thyroid gland had again begun to enlarge diffusely. In 2 weeks more it was three times normal size. The skin was normally moist, but the patient was sensitive to cold. The blood pressure was 136/96.

After 2 months, potassium sulfocyanate was again discontinued. Within 1 week the patient had lost his sensitivity to cold, the skin was normal, there was some exophthalmos, and the thyroid gland had receded. In another

week the gland was normal in size. The patient was more alert and he was still without headache.

After another month the headaches had returned and the blood pressure was 164/108. Potassium sulfocyanate was again instituted, with prompt relief of the headaches

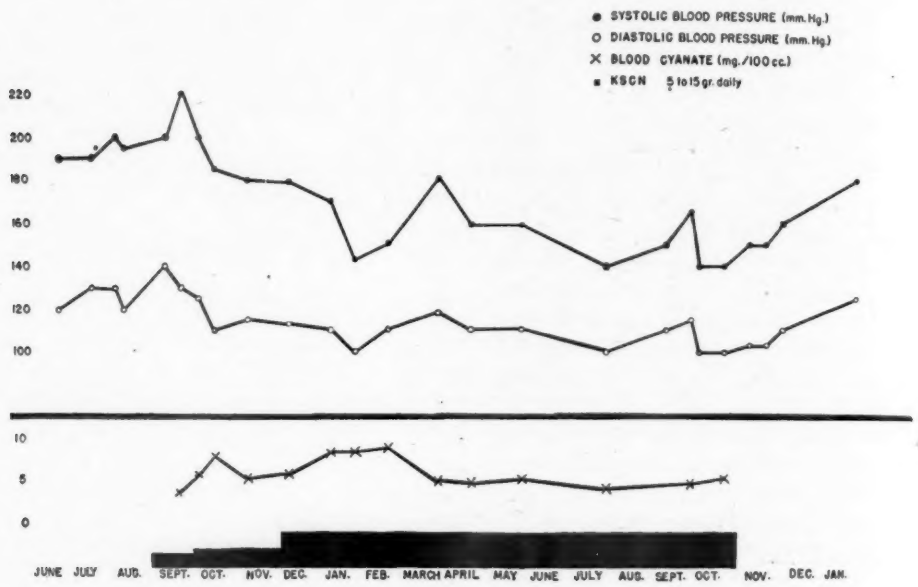

FIGURE 1.

This chart shows the systolic and diastolic blood-pressure levels, the cyanate level in the blood and the potassium sulfocyanate dosage during fourteen months of therapy.

at a blood cyanate level of 3.7 mg. per 100 cc. In 2 weeks the patient felt tired and was intolerant to cold, and lid lag was present. The blood pressure was 140/102. The thyroid gland was two to three times normal size. Again potassium sulfocyanate was stopped, the blood pressure rose, and the headaches returned.

In the past year on the advice of the Thyroid Clinic this patient has taken potassium sulfocyanate together with 1½ to 3 gr. of thyroid daily without enlargement of the thyroid gland and with a blood pressure of 140 to 150 systolic and 90 to 108 diastolic. He has been free from headaches.

In the 3 years since the first examination the blood pressure has been controlled. The patient was given digitalis as well as potassium sulfocyanate, and there have been no notable symptoms of congestive failure, although possibly a slight loss of cardiac reserve. He has tolerated moderate work and even heavy lifting, and is continuously employed.

SUMMARY

One hundred patients with essential hypertension have been treated with potassium sulfocyanate during the past five years. This drug was given after a careful control period during which all the usual therapeutic measures were employed. Since patients with essential hypertension usually appear to be susceptible to suggestion, both favorable and unfavorable, an effort was made during the control period to be reassuring, encouraging and optimistic and to utilize all resources of simple psychotherapy persuasion, suggestion, advice and direction. In this way the effect of psychotherapy has been separated from the action of the drug. The latter has been used cautiously and toxic effects have been kept to the minimum—20 per cent of the patients—but the hypotensive action has not been notable. A fall to normal or near normal occurred in only 12 per cent of the cases, and a sustained fall, although by no means to normal levels, was obtained in 16 per cent, a total of 28 per cent.

Symptomatic relief ascribable to potassium sulfocyanate alone was obtained in over half the patients, and the symptom most effectively relieved was headache, especially the very severe, intractable sort. The relief of headache is in our opinion the most valuable attribute of the drug.

Our care to avoid the toxic effects of what we consider a dangerous drug whose action is incompletely understood often prevented us from obtaining what others consider optimum therapeutic levels. Nevertheless, of the patients in this series who did not obtain additional symptomatic relief from potassium sulfocyanate, the majority attained blood cyanate levels of between 8 and 12 mg. per 100 cc. and frequently higher. Furthermore, the hypotensive action occurred in blood cyanate levels of less than 8 mg. in slightly over half of those showing this reaction. Also, of the patients showing no hypotensive action, 40 per cent

attained blood cyanate levels of 8 mg. or more, and 18 per cent levels of over 12 mg.

The case reported illustrates the better sort of result on the level of the blood pressure and on the symptoms, maintained over a three-year period during exhibition of the drug. During this time, with the additional help of digitalis, congestive failure has been controlled and at this writing the patient is gainfully employed at moderately heavy work. This case illustrates also the goitrogenic effect of potassium cyanate, the details of which are fully discussed elsewhere.[8]

Only 2 of the cases of goiter were observed in this series, both of which receded promptly after withdrawal of the drug and did not recur on readministration of the drug.

Conclusions

Potassium sulfocyanate is a potentially dangerous drug because its pharmacologic properties are not fully understood and because the therapeutic and toxic blood levels are too close and vary too widely in different patients.

The greatest usefulness of potassium sulfocyanate therapy in essential hypertension consists in the relief of severe, migraine-like headache.

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MEDICAL PROGRESS

PHYSIOLOGY*

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PROBLEMS confronting a physician in wartime are not always new, but are often old ones acquiring new significance from the necessity of pushing personal performance far beyond the limits of normal peacetime activity, as, for example, in aviation. The attention they attract may also arise from the increased importance of certain types of disability. Thus, seasickness, which may only occasion distress in peacetime, may endanger life or may threaten the success of a military venture.

The problem of fatigue is important for both the above reasons. There is an increased and increasing demand for exertion, so that one may expect the incidence of fatigue to rise, and the costs of fatigue in terms of output and efficiency must be calculated in terms of winning or losing the war. The seriousness of the problem may also be gauged by the amounts spent by the American public on pharmaceutical products and beverages advertised as possessing antifatigue properties.

Fatigue may be defined as the progressive diminution in output resulting from the repeated performance of a given action. Such a definition is limited, and not in accord with all pertinent data. It is limited in being conceived as a direct and proportional result of work. It fails to recognize the compensatory mechanisms that may operate to maintain output despite fatigue. Most important, however, is its failure to define the subjective aspects of fatigue, which according to some authors[1] constitute the essential feature of the condition.

The site of fatigue has been the subject of much interest, and for a number of reasons workers have been in a large measure preoccupied with the muscles.[2] From muscle physiology of an earlier period come two concepts that have until recently had a prepotent influence on views concerning fatigue. The first is that the various physiologic systems operate by virtue of stores of energy that are dissipated by effort and must be restored by rest. Thus, the authors of an account of chronic exhaustion in test pilots[3] speak of stores of "nervous" energy that become depleted by mental strain. The second legacy from muscle physiology of a past era is the concept of fatigue products or metabolites arising from activity, which accumulate and reduce performance. There is of course no doubt that muscles are subject to fatigue, although in the presence of an adequate blood supply and at a reasonable rate of stimulation — for example, a

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maximal twitch every two or three seconds — the vigor of contractions is maintained at a relatively high level for a considerable time. With newer knowledge of the chemistry of muscular contraction, it becomes increasingly difficult to account for fatigue on the basis of accumulation of lactic acid or disappearance of muscle glycogen.[4-6]

The myoneural junction is perhaps more susceptible to fatigue than is the muscle itself, and failure of transmission at this point may account for diminution in muscular response in normal persons, as it does in victims of myasthenia gravis. The reflex centers in the spinal cord may also become subject to fatigue, especially when reflexes are elicited in too rapid succession. On the other hand, some reflexes are surprisingly little influenced by fatigue, and I have observed a single neurone discharging in the crossed-extension reflex for more than an hour without any signs of fatigue. There is considerable evidence that rhythmically discharging neurones do not become fatigued and fall out, to be replaced by other units (rotation).

When voluntary muscular effort is suspended because of fatigue, it is known that the motor apparatus is still capable of reaction, and in fact most ergograph records of a rhythmic series of muscular contractions carried to the point of fatigue show a characteristic increase in the vigor of contraction as a final effort before contractions cease.[7] In this case the limiting factor is the central nervous system, presumably the cortex, acting under the influence of stimuli arising in the exercising muscle, which give the sensation of fatigue, exhaustion or pain. Anoxia and excessive or prolonged contraction per se are possible factors responsible for the sensory stimulation.[8]

Just what part this type of fatigue plays in the various daily occupations is not precisely known. There may be types of work in which limited groups of muscles are thus fatigued and subsequently rested many times a day; this undoubtedly occurs in persons handling tools to which they are unaccustomed. It must be less frequent in workmen who have become adapted to their tasks. On the whole, in the group of occupations calling for moderate exercise at a rate of no more than three times the basal metabolic rate, there is no evidence of this type of muscular fatigue.[9]

When the amount of muscular work is pushed to higher levels, — for example, eight or more times the basal metabolic rate, — muscular fatigue may well limit the duration of exertion. The breaking point may be determined by the muscles themselves, but frequently a limit is set by the inability of the cardiovascular-respiratory system to furnish an adequate supply of oxygen to the exercising muscles, as shown by increasing dyspnea and a rapid rise in the pulse rate. Hypoglycemia may also determine the breaking point, through its influence on the brain rather than on the muscles, which are relatively insensitive to lack of blood sugar.

Finally there remains what is perhaps, in civilian life, the largest category, characterized by the clear absence of excessive muscular effort. Here are found the afternoon fatigue of the worker doing moderate work, the chronic fatigue of the housewife and the exhaustion of the test pilot.[8] Intercurrent infections, anemias and subclinical vitamin deficiencies may well play a part in such cases, but psychologic factors most often predominate. Here, according to Bartley,[1] conflict and frustration constitute the basis of fatigue.

Treatment must be directed by an analysis of the type of fatigue in each case. Rest is the basic treatment in all types, but the duration and frequency vary. A pleasant environment, adequate diet and interesting social activities, often combined with physical activity, are essential parts of the rest period. As more is learned of the psychologic aspects of fatigue, it is being recognized that such factors as rest periods, the taking of food during working hours and a variety of other changes in working conditions operate in a substantial measure through psychologic rather than direct physiologic mechanisms. This is strikingly illustrated in a table published by Dill[5] showing the output of a group of skilled persons working under carefully controlled conditions. It is noteworthy that practically every alteration led to an increased output; even returning to earlier conditions resulted in increases. The conclusion seems valid that optimal working conditions may be determined by factors other than purely physiologic ones, such as work and rest periods, food, lighting and heating. It can probably be assumed, however, that in the study mentioned above these factors were adequate from the start, and there is evidence that even with great motivation, output cannot be maintained if the working hours are excessively long.

A number of measures have been proposed to reduce fatigue or hasten recovery, and because of the war they are now receiving added attention. Three of these are dietary factors: carbohydrate, gelatin and vitamins.[10]

Hypoglycemia is not usually considered to be a factor in fatigue except as a terminal sign of exhaustion after severe and protracted exercise. When carbohydrate is available for fuel, exertion at a maximum level may be continued longer than when carbohydrate is not available, and workers have reported that ingestion of dextrose increases the ability to perform muscular work after exhaustion.[11] Carbohydrate feeding during rest periods has been observed to increase mechanical

efficiency in workers not subject to such extreme demands. This improvement has been attributed to psychic factors on the ground that the energy output of these workers is not sufficient to cause any significant fall in blood sugar. Hellebrandt[10] concludes "that extra carbohydrate is clearly advantageous to the machine only when the work done approaches peak capacity, and that the use of sugar as a recuperative is physiologically rational only when the activity is sufficiently prolonged and vigorous to produce a hypoglycemic state." Actually, sugar is advantageous to the human machine, and is rational whenever blood sugar falls to hypoglycemic levels, whatever the type of activity or emotional state that produced the fall. The observation by Michael[12] that the blood sugar may reach low levels during a game of golf indicates that one cannot be too dogmatic about the degree of activity required to induce hypoglycemia.

Portis[13] suggests that hypoglycemia may be a factor in the genesis of fatigue noted in neuropsychiatric patients, and believes that hyperinsulinism resulting from overactivity of the vagus nerve supply to the pancreas is responsible. He claims that there is often substantial clinical improvement on a dietary regime in which carbohydrate is not taken in the form of simple sugars and is accompanied by appropriate doses of thiamine and atropine.

An antifatigue action has recently been claimed for gelatin (60 gm. a day by mouth), but the more recent reviews on this subject indicate that evidence to this effect is not yet entirely convincing.[11, 14]

In reports of subclinical deficiencies of the vitamin B group, fatigue is one of the most pronounced symptoms, and improvement on administration of the vitamins has been noted. Just how widespread borderline vitamin deficiencies may be among workers, and how effective vitamin therapy on a wide scale would prove to be, are purely conjectural matters. Undoubtedly extensive experimentation with vitamin preparations in industrial groups is now proceeding, and definite information on this topic will some day be available. Experimental studies by Egaña et al.[15] on sedentary workers taking a diet grossly deficient in thiamine indicated that deficiencies could be established within four weeks. They state that symptoms "were mild and vague, the most constant being easy fatigue, loss of ambition and loss of efficiency in daily work. There was moderate deterioration in the subjects' physical fitness for exhausting exercise, and, particularly, poor recuperation between bouts of exhausting exercise." It is hard to evaluate the subjective factors in this experiment, controls with addition of adequate amounts of vitamins to the diet unknown to the subjects and with placebo therapy not being reported. Well-controlled studies by the same group[16] on manual laborers exposed to a diet deficient in the vitamin B complex showed that the subjects began to suffer within five days a serious impairment of their fitness for sustained hard work.

Among the inorganic salts reported as of assistance in delaying the onset of fatigue are both alkalis and acidifying agents. Sodium chloride is of course invaluable in circumstances where there is salt depletion, to prevent muscular cramps. Although the success of salt therapy is most apparent in industries where work is done at high temperatures, even taking part in strenuous athletic contests may well lead to salt depletion to a harmful degree, and the danger must also be present in many military operations. Potassium salts have an antifatigue action on muscle and on neuromuscular transmission.[17] They have been used in the treatment of familial periodic paralysis and myasthenia gravis, but not of fatigue.

Hellebrandt and Karpovich[10] have reviewed the pharmaceutical substances advocated at one time or another to increase work or lessen fatigue. Oxygen administration prior to a strenuous but short-acting effort, such as swimming one hundred yards, seems to be helpful, mainly by increasing breath-holding ability, which permits the development of more powerful arm or leg action.

The observation that the cardiovascular system is often a limiting factor in maximum exertion has led to the use of digitalis, Coramine and Metrazol to improve maximum performance. Reports favoring the use of Metrazol are extensive.

There is general acceptance of the ability of caffeine, amphetamine (Benzedrine) and allied compounds to ward off fatigue. Apparently amphetamine is more potent than caffeine, and both operate through the central nervous system rather than directly on the muscular system.[18–22]

The asthenia and fatigue so characteristic of Addison's disease have prompted the use of extracts of the adrenal cortex to prevent fatigue or promote recovery. Statements both claiming and denying effectiveness of cortical extracts have been made as a result of studies in normal animals and in man.[10] Much better established is the influence of adrenalin or stimulation of the sympathetic nervous system to postpone fatigue or hasten recovery. Their action may be directly on the muscle, on the cardiovascular system or on the level of blood sugar.

Training is undoubtedly a key to the prevention of fatigue. Its effect is exerted both on the maximum rate of work output and on the quantity of work done.[23] The curve of maximum rate naturally tends to flatten out, and rigorous training is required to increase it thereafter. On the other

hand, the quantity of work done may increase enormously. Six to twelve weeks of daily training resulted in increases of as much as 4000 per cent in work output when the work was done at the rate of one fifth horsepower, and training increased total output 50 to 400 per cent when work was done at one half horsepower.[24] Other authors report comparable increases. Despite a voluminous literature, the physiology of the process remains uncertain. The muscles participate in the process, but so also does the cardiovascular system. Just what changes the heart itself undergoes remains questionable. The fact that a trained person responds to exercise with less increase in the heart rate than does an untrained person may be ascribed to changes in the heart itself or to alterations in the nervous system. Whatever the cause, this response, with the rate of deceleration of the pulse after exercise, constitutes one of the mainstays of tests of physical fitness.[25–28]

Effort Syndrome

Discussion of fatigue and the response of the heart to exercise in trained and untrained persons naturally leads to a consideration of the so-called "effort syndrome," in which fatigue is again an outstanding complaint, and in which the heart responds to effort with an exaggerated increase in rate. If to these two signs are added breathlessness and left inframammary pain, the outstanding features of the condition have been mentioned. Wood[29] has listed the salient signs and symptoms of the syndrome as shown in Table 1. It has occurred to numerous observers that such a list of symptoms and signs might well be produced as the result of a widespread disturbance in the nervous system, including overaction of certain parts of both the sympathetic and the parasympathetic nervous system, muscular spasm in the muscles of the left pectoral region and alteration in respiratory movements. Secondary effects from overventilation are thought to account for many of the signs and symptoms, including dizziness, tendency to syncope, paresthesia, sweating and shortness of breath.[30, 31] Although it is evident that hyperventilation may play a major role in producing symptoms in some persons, it may not be present at all in others; in fact, hypoventilation may occur.[32]

Table 1. *Symptoms and Signs of Effort Syndrome.*

System	Symptom	Sign
General	Fatigue	Typical facies
	Nervousness	Nervous manner
Vasomotor	Palpitations	Overactive heart
	Vascular throbbing	Tachycardia
	Dizziness	Blood pressure above 150/90
	Headache	High deceleration time after exercise
	Syncope	Cold, blue hands
	Paresthesia	Visible flushes
	Flushes	Hyperpnea and tachypnea
Respiratory	Breathlessness	Frequent sighs
	Sighing	Breath-holding for less than 30 seconds
Sudomotor	Undue sweating	Palmar and axillary sweating
Muscular	Cramps	Tremor and shakiness
	Trembling and shakiness	Poor development
	Left thoracic pain	Hyperalgesia over area of pain
Gastrointestinal	Dry mouth	
	Anorexia	
	Vomiting or diarrhea	
Others	Insomnia	
	Frequency of micturition	

There is a growing tendency to consider the effort syndrome as a psychoneurotic manifestation. Miller and McLean,[33] discussing the status of the emotions in palpitations and extrasystoles, say:

> Palpitation is a biological manifestation of fear in the face of danger. The increased pulse rate and intensified heart action make the individual subjectively aware of the increased activity of the heart. Situations which produce palpitation involve an immediate urge to activity and at the same time a fear of it. Common examples are: palpitation experienced upon receiving a rebuke from one's superior, taking an examination, going to a forbidden amatory rendezvous and the like. In all of these situations the individual is driven by his active, ambitious attitude into an apparent danger at the same time he feels an urge to avoid. His flight is blocked.

Writing on the psychologic treatment of cases with cardiac pain, Bourne and Wittkower[34] take much the same position:

> The data obtained confirm the view put forward previously that in cases of functional cardiac pain the pain is nearly always due to transformed anxiety arising from a conflict, unusual in intensity and abnormal in type, between menace to vital feelings and existence on the one side and self-preservation and self-assertion on the other.

It has repeatedly been remarked that the victim is often more than normally conscientious, which perhaps is of some significance from the psychologic viewpoint. The frequent and remarkable distaste for alcohol and the low incidence of venereal disease observed in victims of effort syndrome may be associated phenomena. On the other hand, it must be recognized that infection and general constitutional insufficiency are also frequent etiologic factors. Studies of the work output in the effort syndrome indicate that the reaction of patients with "true effort syndrome" is like that of convalescents from toxic-infective conditions and of constitutionally weak persons, and differs significantly from the response in those with hysteria and in the so-called "anxiety group."[7] In a certain sense the effort syndrome may be considered to be an extreme response of "untrainedness," and the gen-

erally favorable response to careful training bears out this view.

Physiologic and Clinical Tests of Autonomic Function and Balance

However satisfying it may be to be able to ascribe the majority of cases of effort syndrome to a noncardiac etiology, the physiologist is as yet unable to give an account of the manner in which each part of the intricate symptom-complex is developed. It is apparent that the autonomic nervous system is implicated, and that a cortical representation of that system exists through which the various peripheral effects may be mediated. Beyond this there lies a broad field for detailed study. The recent review by Darrow[35] entitled the "Physiological and Clinical Tests of Autonomic Function and Autonomic Balance" should prove to be a useful guide.

The problem is complicated by the following facts. In the first place, regulation in the sphere of the autonomic system occurs through the activity of two antagonistic divisions, sympathetic and parasympathetic. Although most tissues receive a double innervation, this is not universally so. Further complication is added by important exceptions to the rule that the sympathetic division is adrenergic and the parasympathetic cholinergic. Secondly, although in general there is reciprocal control of the two divisions in the central nervous system, this is not invariable, and increased activity of one division cannot be assumed to be accompanied by an equivalent reduction in the activity of the other. This is particularly so in states that impose severe strains on the organism.[36, 37] And, thirdly, the existence of buffer or moderator mechanisms, such as the carotid sinus, adds further complications, in that these mechanisms respond to changes in autonomic activity in certain spheres by setting up vigorous reactions in an opposite direction.

These difficulties are surmounted in part by technics that, so far as possible, isolate a single system for study. Some structures, such as the nictitating membrane of the cat, have but a single innervation. Sweat glands have only a sympathetic innervation, although their secretory fibers are cholinergic. The adrenal glands themselves are innervated by preganglionic fibers of the sympathetic nervous system, justifying the use of circulating adrenaline as an index of sympathetic activity. Other tests aim at the same effect by utilizing preparations in which one of the nerves supplying an organ is sectioned or in which the activity of one division is suppressed, as by atropine or ergotoxine. Other indices of autonomic activity employ a diametrically opposite maneuver, in which an end organ is sensitized to one or another division of the autonomic system. Drugs such as eserine or cocaine may be employed. A particularly ingenious method is that of Beattie, Brow and Long,[38] who have sensitized the heart to sympathin by the administration of low concentrations of chloroform vapor. The sensitization of skeletal muscle to acetylcholine has been employed in the monkey by Bender[39] to reveal the liberation of that substance during emotional activity. The assay of circulating acetylcholine and adrenaline is a technic frequently employed, whereas a fruitful modification, developed particularly by Nachmansohn,[40] is the assay of acetylcholine esterase.

Darrow's suggestion that exercise-tolerance tests may be included in the category of tests of autonomic balance is worthy of consideration. In the Schneider test, for instance, low reclining and standing pulse rates are important factors in obtaining high scores. These factors, as well as the pulse-rate increment with exercise and decrement after it, are potent indications of autonomic activity, and indicate the intimate connection of physical fitness and autonomic activity.

Exposure to Cold

Warfare in cold climates and on the ocean at low temperatures has emphasized the need for physiologic studies of the influence of hypothermia, either of the body as a whole or of the extremities. Fortunately, the work of Fay[41] had already contributed much to the renewed interest in the problem.

One of the most interesting phases of this development has been the reinvestigation of the response of the normal unanesthetized body to cold. The work of Cannon, Querido, Britton and Bright[42] emphasized the dual nature of the response to cold. On exposure to cold, or when a heat deficit was produced by the ingestion of ice water, an increase in metabolism occurred, through which the deficit was made up. This increase in metabolism consisted of a moderate (13 or 14 per cent) increase in metabolism, which was regarded as due to the liberation of adrenaline, and a secondary and greater elevation induced by shivering. Objections to this evidence for a chemical factor in the augmented metabolism resulting from exposure to cold were based mainly on the difficulty of judging the moment when shivering begins.

Recent experiments, in which the onset of shivering is judged by electrical records, indicate that chemical augmentation of metabolism may not invariably be present.[43] The careful work of Hemingway and Hathaway[44] on trained, unanesthetized dogs places a limit of about 7 per cent on the augmentation of metabolism that occurs without shivering. An extremely interesting report is that of Odum,[45] who developed an ingenious

device to record motion in nestlings and in unhatched bird eggs. He demonstrated that homoiothermic behavior does not begin until the young bird is able to shiver in response to cold. It appears that some birds are precocious in their ability to maintain the body temperature when hatched. These birds gain the ability to shiver some time before hatching. The chick appears to possess the ability to shiver at or shortly after birth, but this mechanism is not able to maintain the body temperature with efficiency until several days after hatching, presumably with the development of feathers, increased metabolism and body temperature and a more stable thermoregulator center.[46]

Pinson and Adolf[47] have shown clearly that after moderate heat loss, induced by the ingestion of ice water, a nude man exposed to a room temperature of 30°C. makes up the heat deficit, solely by diminution in heat loss without increase in metabolism. On closer inspection these findings seem to accord with the experience of Cannon and his co-workers,[42] who noted that with high environmental temperatures minimal increases in heat production occurred. Evidently heat deficits at lower environmental temperatures are required to evoke chemical augmentation of metabolism. Sex differences have also been noted: women evidently show a marked decrease in metabolism as the environmental temperature is raised, whereas men do not.[48] Apparently heat loss by sweating is less important in women than in men. The possible mechanism of the chemical regulation to be inferred from this observation has not been discussed.

In the procedure of artificial induction of hypothermia for therapeutic purposes, rectal temperatures are lowered to from 28 to 33°C. At these temperatures shivering, voluntary muscular activity and a muscular rigidity of undetermined nature are still present. Probably for this reason the metabolic rate remains above normal.[49] Blood tends toward acidity and becomes less fully saturated with oxygen. Below 30°C., possibly because of anoxia, and possibly because of reduction in blood sugar,[50] shivering begins to fail. With disappearance of shivering, production of heat diminishes and it is reasonable to assume that a further fall in body temperature will proceed with greater rapidity.

The anoxia at low body temperatures has been noted also in animals artificially cooled, and attention has been called to the possibility that many of the mental changes in hypothermia are due to anoxia.[51] Walther's[52] observation in 1862 that artificial respiration applied to rabbits cooled to 18°C. permitted their recovery even if they were left in a cool environment (10 to 12°C.) suggests that anoxia might have been responsible for the failure to survive of animals not so treated. Randall[46] has recently observed that chicks normally cease breathing when cooled to 15°C., the heart continuing to beat at temperatures as low as 8.5°C. He states, "Administration of 100 per cent oxygen into the trachea and out by way of a punctured abdominal air sac maintained a respiratory rhythm (6 per minute) at a temperature of 10°C., indicating that hypothermic death is primarily caused by anoxic paralysis of the respiratory mechanism." There is a strong suggestion from this work that measures of revival after exposure to cold should include oxygen therapy and possibly the intravenous administration of glucose.

The renewed interest in the anesthesia and the peripheral vasoconstriction associated with hypothermia, probably first noted by Walther,[52] has led to the introduction of local cooling, sometimes in conjunction with tourniquets, in the treatment of injuries of the extremities. Reduction of pain, prevention of bleeding, limitation of exudation, postponement of tissue necrosis by reduction of local metabolic requirements and, above all, prevention of shock are the advantages sought in this treatment. Reports[53, 54] on the subject to date are promising, but indicate that the procedure cannot be used conveniently except on the limbs, and that cooling is not a particularly successful treatment for shock following trauma to a limb, although it appears to lengthen the survival period.[55]

The cutaneous vascular responses to cold have been studied with improved technics by Hertzman and Roth.[56–58] The initial response to cold is vasoconstriction. There is a reflex component, restricted to the small vessels, and found in both cooled and noncooled regions. This response is reinforced by further, delayed constriction in the same vessels in the cooled areas only, and by constriction of the large arteries in the cooled parts, apparently as a direct result of the cold. After five to sixteen minutes of vasoconstriction, a period of vasodilation supervenes. It appears after sympathectomy and after section of sensory fibers, but not after their degeneration. It has been attributed to the liberation of a histamine-like substance that excites an axon reflex. This suggestion is supported by the observation that in certain cases of excessive vasodilator response to cold, desensitization with histamine or treatment with histaminase affords a measure of relief.[59, 60]

Regeneration of Nervous Tissue

The ability of nerve cells to regenerate severed axons is another subject of physiologic interest receiving renewed attention as a result of the war. A recent review by Young[61] provides a general account that includes most of the newer work on the subject. Evidently, the essential factor making

regeneration of function possible after severance of a peripheral nerve is the survival, in the peripheral segment of the nerve, of Schwann cells, which maintain their integrity and form small tubes down which the regenerating fibers may grow. The Schwann cells also play a leading role in bridging the gap between the cut ends of the nerve, thus providing a scaffold down which the new nerve fibers are led. Young discusses the various attempts to bridge large defects by nerve grafts to provide such tubular channels. Among the most successful of these attempts is that of De Rezende,[62] who finds that homografts are not necessary and that formalin-fixed and stored nerves serve equally well.

The relation between rate of growth and restoration of function in regenerating nerve has been studied but little. Recently Berry, Grundfest and Hinsey[63] have measured the rate of conduction in regenerating fibers and have found that the fine newly regenerated fiber conducts at the slow rate of a few meters a second, and that as it grows in diameter it becomes capable of more rapid conduction. The relation between rate of conduction and fiber size discovered in adult nerves is thus found to hold for regenerating fibers.

The favorable influence of acetyl-β-methylcholine and Prostigmine on the rate of recovery of function after alcohol blocking and section of the sciatic nerve in cats[64] may indicate that the rate of growth of the regenerating fiber is increased by acetylcholine and allied compounds. It may, on the other hand, indicate a prompter recovery of function in the motor neurone supplying the cut axon. This latter supposition is strengthened by the observation of Ward and Kennard[65] that recovery of function after ablation of Areas 4 and 6 in the monkey is hastened by a similar treatment. Recovery of function in this event can hardly be expected to depend on regeneration of nerve fibers.

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NEW HAMPSHIRE MEDICAL SOCIETY

PROCEEDINGS OF THE ONE HUNDRED AND FIFTY-SECOND ANNIVERSARY

House of Delegates, May 10 and 11, 1943 (Concluded)

THE report of the Committee on Medical Education and Hospitals was then presented.

Report of the Committee on Medical Education and Hospitals

The preoccupation of all our members, with the added demands on our time and energies, and the similar conditions prevailing throughout the country have reduced the scope of this report to perfunctory dimensions.

We have no data on past postgraduate medical education or plans for the immediate future beyond the hope that if anyone can foresee the opportunity he will consider the Commonwealth Fund fellowships.

As this is written, there is still some uncertainty whether there will be fellowships available this year for physicians in New Hampshire. The amount appropriated for Commonwealth Fund fellowships this year was considerably reduced over that available in previous years, and this amount was made available with the understanding that preference would be given to applicants from the states in the South in which the Fund is carrying on its public-health program. If the number of applicants from these states is insufficient to exhaust the funds available, applicants from New Hampshire may be considered.

Because of the war situation, the number of courses available at Harvard has been somewhat reduced, but application may still be made for a month's work in obstetrics to be taken during any month in the year; for internal medicine during the month of October; and for pediatrics during the month of November or a short intensive course of two weeks' duration during August. The usual stipend of $250 for the month's course, plus reimbursement of tuition and necessary travel expenses to and from Boston, will be offered. For the short intensive course in pediatrics, the stipend will be at the rate of $10 a day.

It is our recommendation, however, that anyone who can anticipate finding the necessary time should make application as usual in the hope that a fellowship may become available.

JOHN P. BOWLER, *Chairman*
JAMES W. JAMESON
HERBERT L. TAYLOR

Dr. Peters, of the Committee on Officers' Reports, moved the adoption of this report; it was so voted.

Dr. Peters then read a letter from Dr. Dolloff, of the Committee on Mental Hygiene, stating that the committee had no report to make, because of pressure of other matters and a paucity of ideas among the members of the committee. The Committee on Officers' Reports moved the acceptance of this report. The motion was carried.

The next report was that of the Committee on Public Health.

Report of the Committee on Public Health

This is the second year that the Committee on Public Health has functioned. Having started to grow up, the members are becoming conscious of the many duties that beset our particular group. War has already devastated many sections of the world, and in most living-rooms are the empty seats of sons or daughters who are already serving with our fighting forces. These facts tend to bring home the thought that we have a tremendous job ahead of us in supplying, in ever-increasing amounts, the many products necessary to carry on this titanic struggle. Of itself this obligation seems large, but add to it the needs and necessities of our allies and the proportions become so great as to be staggering; yet these are our commitments and we will carry through. This means of course a proportionate drain on man power, particularly in the industrial fields, which have constantly been depleted of their youth by the need of these men in the fighting forces. Older men and women have had to take their places in the workshops of the nation.

Loss of time means loss of ships, ammunition and other suppliés vitally needed for the successful progress of the war. The industrial-health program is one of the prophylactics by which we hope to meet our responsibilities and to keep our war effort constantly on the increase.

In New Hampshire there are few companies capable of having a full-time medical department; however, many can and do have the part-time service of a doctor, with

possibly the full-time services of a nurse. There are many other suggestions, such as the combined or joint services of a doctor among several different plants or units and so forth, all of which will have to be worked out in accordance with the particular set-up under consideration.

The promotion of better health among our workers through education regarding sanitary and safety methods in plants, together with improvement in hygienic conditions in the workers' homes, should be part of our contribution toward victory. This can be organized along the many lines set forth by the Committee on Industrial Health of the American Medical Association, with modifications to suit our particular needs.

Your committee recommends that although our industrial efforts in New Hampshire are small as compared with those of many other states, we should keep informed on national industrial activities as they pertain to the medical man. In part this can best be accomplished by representation at the Annual Congress of Industrial Health, and the dissemination of the information gained through this meeting to our members in New Hampshire.

Using this as a basis we can spread out in our activities as our needs and circumstances permit.

HARRIS E. POWERS

Dr. Metcalf then presented the report of Dr. Powers as the delegate of the Society to the Fifth Congress on Industrial Health. He added that copies of the report were available to members of the Society who wished them.

Dr. Peters for the Committee on Officers' Reports, recommended that the House of Delegates extend their appreciation to Dr. Powers for his excellent and comprehensive report. He said that it reflects the diligence and interest applied to the papers of the meeting, and emphasized the increasing importance and value of this committee to the Society.

This motion was carried.

Dr. Peters said that it was further recommended by the Committee on Officers' Reports that the House of Delegates approve continued representation at the Annual Congress of Industrial Health, and that the expenses of such delegate again be defrayed by the Society. He moved the adoption of this portion of the report.

Dr. Metcalf questioned how much value the report had, adding that it had cost the Society over $100. Dr. Sycamore asked Dr. Metcalf whether the cost of the report included all expenses. Secretary Metcalf replied that the total cost was $125, including about $25 for printing and $100 for traveling and hotel expenses.

The motion was put to a hand vote and was lost.

Speaker Parsons in answer to the question whether the enabling act could be carried out without a meeting of the House of Delegates, by sending the proposition to each delegate, stated that he could find nothing in the constitution or by-laws that covered the matter, but that Chapter XV of the by-laws read:

> For the purpose of transacting any important business which the by-laws do not permit, the by-laws may be suspended by a unanimous vote of those present and in executive session either in the House of Delegates or in a General Session.

It would be necessary, he said, to suspend the by-laws temporarily and vote unanimously to take a vote on the proposition for the medical-service corporation in that way. The by-laws did not permit the action of the House of Delegates except when in active session.

Dr. Johnston moved that the by-laws be temporarily suspended for the purpose of taking a nonassembled vote on this question when the committee was prepared to present it.

Dr. Parker said that the matter was of enough importance to be disposed of quickly, so that it might be possible to get a quorum at a special meeting called by the President when the time was ripe.

Dr. Johnston suggested getting the consensus of the members present as to how they would react to coming to a special meeting, and some idea of how many would attend it, before entertaining any motion. The majority of those present indicated by a hand showing that they would attend. In view of this, Dr. Johnston then withdrew his motion, and its seconder agreed.

There was no report of the Committee on Public Relations or of the Committee on Scientific Work. The next report was that of the Committee on Tuberculosis.

Report of the Committee on Tuberculosis

The phenomenal progress which has been won during the past period of twenty years in the reduction of mortality and morbidity from tuberculosis in New Hampshire and throughout the Nation is now seriously menaced. There is real danger that this fight against a devastating foe of mankind, which has met with such dramatic and encouraging success, may now meet with reverses.

The more hopeful workers in the campaign, among whom is the chairman of your committee, are of the opinion that we cannot be certain of continued substantial reduction in mortality and morbidity within the next few years. However, it is our belief that the gains already won can be held and perhaps even further slight declines achieved. Other workers and observers have expressed the belief that the annual reductions are at an end and that definite increases are inevitable.

The reason for these forebodings is, of course, the effects of total war on the physical and mental stamina of the people, with resultant lowering of resistance and consequent tendency to development of tuberculosis.

Alarming increases in the diseases are known to be occurring in all the countries at war in Europe. One of our leading public-health authorities who has studied the European situation states that tuberculosis will become a plague affecting approximately 10,000,000 persons in Europe after the war.

A three-point program by which the United States

could help check this anticipated plague has been outlined as follows:

(1) Governmental and private agencies dealing with tuberculosis in this country can appraise the problem and develop the control program, for which public or private funds or both could be used.

(2) Many American physicians and x-ray technicians who are gaining tuberculosis experience and training with the armed forces during the war could be used for postwar service abroad.

(3) Some of the vast amount of equipment acquired by the armed forces for the chest x-raying of men entering the services could be assigned or contributed to foreign service after the war.

Wartime increases in tuberculosis are reported in England, Wales and Scotland. Particularly significant is the fact that, whereas the increases in tuberculosis deaths in adults is only 15 per cent, the increase in children approximates 45 per cent. A large part of this increase is due to tuberculosis meningitis in children. This increase indicates that English and Welsh children have been coming more and more in contact with open cases of the disease at a time when their resistance was lowered by change in diet, unaccustomed environment, poor milk, lack of sleep and frequent retreats to air-raid shelters, where the spread of tuberculosis is so easily facilitated.

In Canada the tuberculosis death rate increased in 1941.

In the United States the tuberculosis death rate in 1941 was 44.4 per 100,000 population. This figure represents a decline from the rate of 45.9 in 1940. Preliminary data for 1942 imply that the slight decline in the death rate may continue throughout our first year at war. A far different result may be the case, however, if the war should last several years and if the American people should be subjected to conditions that approximate those now prevailing in England.

During the past year a committee appointed by Governor Blood made a study of the tuberculosis situation in New Hampshire. The committee was assisted by Dr. Herman E. Hilleboe, surgeon-in-charge of Tuberculosis Control, States Relations Division, United States Public Health Service, who made a survey at the sanatoriums at Glencliff and Pembroke, the New Hampshire State Hospital, the Laconia State School, the Mary Hitchcock Hospital, the New Hampshire Tuberculosis Association and several other organizations.

As a result, many recommendations were made for the further development of the tuberculosis-control program in New Hampshire. These include the following: an addition to the State Sanatorium at Glencliff to take care of all patients requiring hospitalization and treatment, including chest surgery; the mass examination of all industrial workers in the State in co-operation with management and labor; the co-ordination of the activities of the several interested institutions, organizations and state departments through a representative advisory council; and the placing of the control over admittance to and continuance of hospitalization in the institutions in the hands of the State Department of Health.

The committee's report urged that tuberculosis-control efforts should be concentrated among "males 35 to 65 years of age — the persons who provide the backbone of our man power during the present emergency and the principal source of infection today."

Governor Blood in this message concurred, telling the Legislature that the greatest incidence of tuberculosis now is found in this age group, surveys in other states having detected the disease in 1 per cent of those examined. Experience also has found that 60 per cent of those cases found were in the minimal stage, when treatment is most effective. Also pointed out was the net result that the effect of such a program would be to decrease tuberculosis in the State to the vanishing point within a few years, though showing a temporary increase at the start, which would tax the facilities available for treatment until the reduction could make itself felt.

The Industrial Hygiene Division of the State Department of Health and the New Hampshire Tuberculosis Association are now engaged in developing this program. Management and workers in a number of industries have been enlisted in several parts of the State. In the beginning, 14-by-17-inch film will be used, but plans are to secure a semiportable 35-mm. x-ray unit or a 4-by-5-inch mobile unit, which will enable the entire program to be more rapidly developed. The State Department of Health and the New Hampshire Tuberculosis Association appeal to the members of the New Hampshire Medical Society for their active support in the development of this important phase of the tuberculosis-control program.

The slogan of the sixteenth annual early-diagnosis educational campaign of the National Tuberculosis Association and its affiliated organizations is, "Follow the Example of the Armed Forces — Get a Chest X-Ray." The slogan draws attention to the fact that every man examined for the armed forces has an x-ray examination of his chest. The objective of the 1943 campaign is to emphasize that chest x-ray examination among the civilian population is just as important, and that the successful carrying out of this program can hasten the eradication of the disease.

Your committee urges more frequent use of the chest x-ray films by the physicians in New Hampshire, particularly for all patients presenting any symptoms that might suggest tuberculosis, for all who have lived or worked with a person who "took sick" with tuberculosis and for pregnant mothers. The New Hampshire Tuberculosis Association is ready to provide this service through its chest diagnostic clinics for patients referred by physicians. Also the association will provide chest x-ray films through co-operating hospitals for patients and "contacts" when the physicians so request. It should be and is the urgent desire that no person in New Hampshire needing an x-ray examination of the chest shall be deprived of the same because of lack of funds.

ROBERT B. KERR, *Chairman*
CLARENCE O. COBURN
M. DAWSON TYSON

Dr. Peters, for the Committee on Officers' Reports, moved the acceptance of this report. The motion was carried.

The next report was that of the Committee on Medical Preparedness, by Dr. D. G. Smith.

Report of the Committee on Medical Preparedness

The Committee on Medical Preparedness has continued its co-operation with the Selective Service System and has approved all appointments of physicians as examining physicians and members of the medical advisory boards.

The committee is closely affiliated with the State Committee of the Procurement and Assignment Service, which is endeavoring to secure physicians for the armed forces and at the same time retain sufficient doctors at home to take care of the civilian population. This work is becoming more and more difficult as nearly all of those under

forty-five years of age and physically fit who still remain at home are either essential to the Dartmouth Medical School, are needed in their specialties or are the only physicians in their respective towns. Theoretically, replacements should be found for these men, releasing them for service in the Army and Navy, but practically there are almost no physicians suitable for replacement.

The young men have done their part in applying for commissions, but it is regretted that some of the older men have failed to realize that they must work harder than ever before to provide adequate medical service for all.

It is hoped that the House of Delegates appreciates the time and effort that the members of the county committees have given to the preparedness and procurement programs.

DEERING G. SMITH, *Chairman*
EZRA A. JONES
CARLETON R. METCALF

The Committee on Officers' Reports recommended that the Committee on Medical Preparedness remain unchanged. The motion was carried.

Dr. Peters said that the Committee on Officers' Reports further recommended — and this was concurred in by two members of the committee — that the House of Delegates express their appreciation to Dr. D. G. Smith for his devotion to his duties on the Committee on Medical Preparedness, multiple as they were, and undoubtedly at a personal sacrifice in the performance of this work. He moved the adoption of this portion of the report. The motion was carried.

It was voted that the reading of the Necrology Report be dispensed with, since it would appear in the Transactions.

The next business was the selection of the place of the next meeting. Dr. Dye moved that the Society express its gratitude to the Manchester group and that the next year's meeting be held at Manchester. The motion was carried.

Dr. Beaudoin moved that Dr. T. C. Pulsifer be made an affiliate member. The motion was carried.

The next report was that of the Committee on Maternity and Infancy, by Dr. B. P. Burpee.

Report of the Committee on Maternity and Infancy

This year marks the ninth in the study of maternal and infant deaths in New Hampshire by the Committee on Maternity and Infancy. This year again the maternal death rate is lower than that of 1941, as are the infant death and stillbirth rates. The committee has endeavored, as in the past, to study and analyze all available data on the maternal deaths of 1942, and to appraise these data so far as possible, having the advantage of knowing the result of a procedure and not having to decide the actual course to be taken. The committee realizes that it is much easier to decide what should have been done in a certain case retrospectively than it is to be confronted with the actual problem and have to decide what course to pursue. It is with this thought in mind that we wish physicians to read these recommendations and suggestions made. It is the committee's thought that such comments as are made may be of value to all physicians who may at any time have similar cases. It is realized too that there are situations where two avenues of approach are present, or seemingly present, and it is up to the attending physician to choose the one that seems to him the best; if the approach used by him fails, he can only wager that the other approach would have given a better result.

The information for this study was gathered from physicians' and hospital records. It has been a little more difficult in obtaining the necessary data this year, owing to the fact that some of these physicians are in military service and their hospital records, in some cases, are incomplete. In 1 case only were there insufficient data for the committee to classify it in one of three groups.

It is gratifying to all to see a reduction in the maternal death rate, the highest over a period of ten years being 6.3 per 1000 live births in 1933.

The greater portion of deaths were classified as unavoidable, which is encouraging, but we must point out that 3 of these had been treated by out-of-state physicians, and had been sent over the border in such a physical condition that these deaths were unavoidable to the extent that the New Hampshire physician was involved. In all 3 cases, from information gathered as to care given by the out-of-state physician, it would seem that the care was inadequate. This situation may work in reverse, that is, patients go into other states for final treatment having received inadequate care in New Hampshire, so perhaps we are not justified in trying to make our maternal death rate appear lower.

As yet, not much has been done in the study of infant deaths in this state, mostly for the reason that it would be too much of a task for this committee to gather data complete enough on each case to make feasible recommendations. The deaths have merely been tabulated according to causes, these causes having been taken from the death certificates.

Stillbirths have also been tabulated according to causes. The definition of a stillborn child now in general use in the United States, and the one accepted by the Children's Bureau, the American Public Health Association and the Bureau of the Census, has been adopted by New Hampshire and will be found in the section on stillbirths. The problem of stillbirths is a real one, not only for New Hampshire, whose stillbirth rate compares favorably with many other states, but for the United States as a whole. Even though the Bureau of the Census issues statistics, the whole story cannot be told by figures, as there is no single definition of a stillbirth in universal use. The period of gestation, which must be reached before registration as a stillbirth is required, differs in each state.

MATERNAL DEATHS

There were 15 maternal deaths in 1942, which is 2 less than in 1941, and the lowest number recorded since this study began. In 1942 there were 9599 live births, thereby giving a maternal mortality of 1.6 per 1000 live births. It is to be noted that there were 914 more live births in 1942 than in 1941. This was expected, owing to the influx of people into New Hampshire to the defense area, and to the increased number of marriages on the part of those men leaving for military service.

These 15 maternal deaths have been classified according to the *International List of Causes of Death* (fifth revision). This classification was made on the basis of what the attending physician placed on the death certificate as the cause of death.

Classification No.		No. of Deaths
147 (*b*)	Puerperal sepsis	3
148 (*b*)	Puerperal nephritis	1
149 (*b*)	Difficult delivery with hemorrhage	1
147 (*c*)	Puerperal thrombophlebitis	2
140 (*b*)	Abortion with infection	1
141 (*a*)	Abortion without infection — hemorrhage	1
144 (*b*)	Toxemia — nephritic (death before delivery)	2
142 (*a*)	Ectopic gestation	1
150 (*c*)	Other and unspecified conditions of childbirth — asphyxiation due to inhalation of foreign matter	1
146 (*c*)	Postpartum hemorrhage	2
	Total	15

The committee has reclassified these deaths for the purpose of this report on the basis of data presented in the following way:

Cause of Death		No. of Deaths
Accidents of pregnancy		5
Puerperal embolism	2	
Ectopic gestation ruptured	1	
Asphyxiation — inhalation	1	
Acute pulmonary edema	1	
Post-partum hemorrhage		4
Following spontaneous abortion	1	
Retained placenta	1	
Cause undetermined	2	
Toxemias (all types)		3
Puerperal sepsis		2
Abortion (self-induced with resulting bacterial endocarditis)		1
Total		15

There were two cesarean sections done in the 1942 series. One was considered as justifiable and the data on the other were insufficient for the committee to make any comments. Of these 15 deaths, 4 autopsies were obtained, 3 of which confirmed the diagnosis made by the clinician. In 1 autopsy the cause of death could not be determined, but a complete autopsy was not done since permission to examine the head was not given. The committee from the data obtained classified this as an accident of pregnancy, probably acute pulmonary edema.

It has been the usual procedure of this committee to classify these deaths further, just by way of making the problem more concrete and to try to point out to what extent clinicians can be held responsible in helping to lower maternal deaths. Group I includes the cases in which the patient was at fault because of refusal for prenatal care, neglect, self-induced abortion and so forth; Group II, those in which the obstetric treatment was inadequate; Group III, those which were apparently unavoidable; and Group IV, those where data were insufficient and, therefore, undetermined.

Classification	No. of Deaths
Group I	3
Group II	4
Group III	7
Group IV	1
Total	15

The causes of death in Group I, where the patient was at fault, were as follows:

Cause of Death	No. of Cases
Toxemia of pregnancy (neglect of treatment)	2
Induced abortion	1
Total	3

The causes of death in Group II, where it was considered that inadequate care was given, were as follows:

Cause of Death	No. of Cases
Post-partum hemorrhage	2
Puerperal thrombophlebitis with pulmonary embolism	1
Difficult delivery with puerperal sepsis	1
Total	4

The causes of death in Group III, in which the deaths were considered unavoidable, were as follows:

Asphyxiation due to inhalation	1
Phlebitis with embolism	1
Post-partum hemorrhage	2
Ruptured ectopic gestation	1
Puerperal sepsis	1
Toxemia	1
Total	7

The toxemia listed in this group was one of those that had been treated out of state and was first seen by a New Hampshire doctor when the patient was having sustained convulsions and died within a few minutes. An immediate cesarean was performed and a live baby delivered. The case of puerperal sepsis was one of those seen by a New Hampshire doctor in the terminal stage. In both these cases, the committee considered these unavoidable since this particular study is to comment on the grade of obstetrics being done in the State, as is evidenced by the analysis of these particular cases.

Only one case must be put in Group IV because of insufficient data. The cause of death given was puerperal sepsis following cesarean section.

In the numerical analysis, the group of unavoidable deaths is the greatest, and the order of causes of death are accidents of pregnancy, post-partum hemorrhage, toxemia, puerperal sepsis and induced abortion with resulting endocarditis.

In the 1942 series all cases were delivered in a hospital. The deaths by county in urban and rural areas were as follows:

County	Urban Cases	Rural Cases	Total
Belknap	1	0	1
Carroll	0	0	0
Cheshire	0	0	0
Coos	0	2	2
Grafton	3	1	4
Hillsborough	2	0	2
Merrimack	0	0	0
Rockingham	3	1	4
Strafford	0	0	0
Sullivan	0	2	2
Totals	9	6	15

The maternal mortality rates per 1000 live births by years from 1933 to 1942, inclusive, are as follows:

Year	No. of Deaths	Rate Per 1000 Live Births
1933		6.3
1934		5.4
1935	46	6.1
1936	37	4.8
1937	34	4.3
1938	24	3.8
1939	25	3.1
1940	24	3.1*
1941	17	1.9*
1942	15	1.6

*Corrected rates.

The most recent figures available for maternal death rates are those of 1940. At that time the maternal death rate for the United States as a whole was 3.8 per 1000 live births. North Dakota had the lowest maternal death

rate, 1.7, and South Carolina the highest, 6.8. New Hampshire for 1940 was in nineteenth place with a rate of 3.1. We have no comparable figures for 1941 and 1942.

Comments and Recommendations

The committee, having reviewed all the available data, reports that in no case was there evidence of really bad obstetrics. In most cases, it was a matter of not giving enough treatment, rather than the wrong kind. This appeared to be true in the 2 cases of post-partum hemorrhage, and at this time the committee would like to make certain comments on the treatment of such cases.

The committee would like to emphasize once again the necessity of proper diagnosis and immediate treatment of those women who suffer hemorrhage or who show signs of shock immediately or soon after delivery, whether the delivery has been spontaneous or operative. One must remember that uterine atony is not the only cause of post-partum hemorrhage, and more especially of shock without evidence of external bleeding.

Other pathologic conditions may be a partially separated placenta, retained cotyledons of a removed placenta, cervical tear, tear of the lower segment or body of the uterus and, less frequently, inverted uterus, fibromas and ruptured vaginal varicosity. These may all cause profuse bleeding.

The conditions that may cause profound shock without external bleeding are tear of the lower uterine segment, rupture of the uterine body and inverted uterus.

Each of these conditions is serious enough to justify immediate sterile vaginal examination, both manual and visual, to establish correct diagnosis, the specific treatment to follow depending on that diagnosis. Partially separated placenta and retained cotyledons should be removed manually. Cervical lacerations should be repaired under direct vision. A ruptured uterus requires abdominal surgery, either to repair the rent, if possible, or to do a hysterectomy. Fibromas with persistent bleeding may also necessitate hysterectomy. An inverted uterus requires replacement either manually from below or by abdominal surgery. Ruptured vaginal varicosities may be controlled by packing tightly. In addition to these briefly outlined specific treatments, the committee would like to reiterate the immense value of intravenous fluids, especially transfusions of whole blood or plasma.

It is thought worth while to stress the importance of keeping confined to bed a patient who shows clinical evidence of a phlebitis, particularly in the presence of a septic temperature, regardless of how low grade, until the temperature becomes normal and remains normal, and the signs and symptoms clear. There is a great tendency on the part of physicians to disregard these warnings and to get these patients out of bed, only to have them die in a few minutes.

One death was due to inhalation of vomitus while being delivered. Although this was considered unavoidable, it does nevertheless remind us that we can be more careful in explaining to patients the importance of not eating heavily, or not at all, if there are signs and symptoms of going into labor.

The 2 cases of death due to toxemia were classed in Group I, that is, the patient being at fault. In both cases, the patients were being seen regularly and being given good prenatal care. Both patients were more or less toxic throughout, and both neglected to report back to the physician when told to do so. Both were severely toxic when finally seen. The committee wishes to point out that the fault does actually lie with the patient, but can a physician who is giving good prenatal care forget about a toxic patient? In most cases, it would be easy to contact this patient either by telephone or letter or by sending out the district nurse or public-health nurse and asking her to check on these patients or to see that they come in to their doctor. These nurses are placed in the field to help physicians as well as patients. It is up to the physician to educate his toxic patient as to the value of frequent prenatal visits.

The committee must continue to comment on the value of hospital records and the necessity of keeping these up to date. For the most part, hospital records, when resorted to for information this year, were most incomplete. To be sure, most of these incomplete records were those of physicians who had gone into the armed services and were undoubtedly too busy at the last to think of hospital records. There are also incomplete records of physicians who are not in service. The one case classed in Group IV is an example of the latter. From the hospital record it can be gathered that the infant was delivered by cesarean section and that the mother died two days post partum. No reasons for performing a section were given. It seems necessary to keep stressing the subject of records. Keeping poor records helps to lower the standard of the hospital. It is as much the hospitals' responsibility to see that their records are kept up to date as it is the physicians'. Good records are a safeguard for both physicians and hospitals.

Maternity-Care Program for Servicemen's Wives

The committee served this year, as before, as an advisory committee to the State Board of Health regarding programs involving the care of mothers and infants. The purpose of this procedure has been to afford proper representation of the Society regarding such programs.

With the induction of thousands of young men from New Hampshire into the armed forces, it became apparent that provisions had to be made for the care of pregnant wives of these men. The committee was confronted with the problem of aiding the State Board of Health in meeting this emergency. The following facts are presented for the information of the Society.

The First Deficiency Appropriation Act of Congress in 1943 provided for a sum of money to be allotted to any state setting up a program for maternity care of wives of servicemen. New Hampshire has such a program now in operation, administered by the State Board of Health through the Division of Maternal and Child Health. As to eligibility for care under this plan, "Any woman in the State, irrespective of legal residence, whose husband is an enlisted man [this includes men deceased or missing in action] in the armed forces of the United States of the fourth, fifth, sixth and seventh grades [Army, Navy, Marine Corps and Coast Guard], and who makes application for such care, will be eligible for the medical and hospital maternity services provided under the plan, without cost to the family, when similar services are not otherwise available from the medical or hospital facilities of the Army or Navy or from facilities provided by or through official state or local health agencies."

Application forms for this service have been distributed to physicians, hospitals, the Red Cross and other social agencies throughout the State, and more may be obtained from the State Board of Health.

The service gives prenatal, delivery and post-partum care, and hospitalization on ward service at a flat rate at present of $45 for a ten-day period. Physicians are paid on the basis of $15 for prenatal care and $20 for delivery. This fee was recommended by the Committee on Maternity and Infancy of the Society.

Applications must be returned to the Division of Maternal and Child Health, 17 School Street, Concord, and on receiving the application, authorization for this care will be sent to the physician and hospital involved. The plan is not retroactive; all care must be authorized before financial responsibility for the case can be assumed by the Division of Maternal and Child Health. In case of an emergency delivery, this department must be notified within forty-eight hours.

Hospitals to be used under the plan are those which are duly licensed by the State Board of Health to admit and care for maternity patients. Home deliveries are to be done at the discretion of the attending physicians. Only those physicians who are graduates of a recognized medical school, have an M.D. degree and are licensed to practice medicine in New Hampshire may be authorized to give medical care under this plan.

Any further information regarding this plan may be obtained from the State Board of Health.

Infant Mortality

Included in this group are those infants who died under one year of age. There were 322 infant deaths in 1942, giving an infant death rate of 33.5 per 1000 live births. In 1941 there were 319 deaths, a rate of 33 per 1000 live births. These deaths are tabulated as to causes and time of death after birth.

Cause of Death	No. of Deaths
Deaths occurring during the first day:	
Prematurity	87
Congenital deformity	29
Atelectasis	12
Intracranial hemorrhage	7
Birth injury	4
Toxemia	2
Prolapse of cord	1
Hemorrhagic disease of newborn	1
Total	143
Deaths occurring during the first month exclusive of the first day:	
Prematurity	20
Congenital deformity	16
Pneumonia	7
Atelectasis	5
Asphyxia	2
Hemorrhagic disease of newborn	7
Intracranial hemorrhage	5
Enteritis	2
Septicemia	1
Hydrothorax and edema	1
Meningitis	1
Syphilis	1
Unknown	1
Total	69
Deaths occurring from the second to the twelfth month, inclusive:	
Pneumonia	33
Malnutrition	10
Congenital anomaly	10
Gastroenteritis	9
Suffocation (accidental)	8
Influenza	2
Intussusception	2
Pyelonephritis	1
Septicemia	1
Tubercular meningitis	2
Pyloric stenosis	2
Osteomyelitis	1
Unknown	4
Total	85
Unclassified owing to late reporting	25

There has been a steady decline in infant mortality in the United States as a whole since 1915, when data on this subject were first collected. The rate then for the country as a whole was 100 per 1000 live births, and in 1938 it was just half, 50 per 1000 live births. The better control of communicable diseases and a better understanding of infant feeding, thereby decreasing gastrointestinal disturbances, have probably contributed greatly to this decrease. It is interesting to note, that, so far as figures can be obtained, New Zealand has consistently reported a lower infant death rate than any other country, whereas the Netherlands, Australia, Norway, Sweden and Switzerland have reported rates that have been lower than those of the United States, according to the last obtainable figures (1936).

For the year 1936, in the United States the causes of deaths of infants under one year of age, as compiled from the death certificates, showed that 52 per cent died of prenatal and natal conditions. These conditions included prematurity, injury at birth, malformation and debility. From 1915 to 1936, where figures are available, deaths under one year have been cut in half, deaths during the first month have been reduced one fourth, and deaths occurring on the first day have shown no decrease.

Our own series of infant deaths bear out some of these facts, namely, that the death rate for those during the first day of life remains high. In the United States as a whole the rate in 1915 and 1936 was 15 per 1000 live births, and New Hampshire also shows 15 per 1000 live births in 1942. The New Hampshire series also shows that over 50 per cent are attributable to prenatal and natal conditions. Adair and Potter point out in their book *Fetal and Neonatal Death* that the classification used by the Bureau of Census, which is an international one, classifies all conditions under one of five headings, namely, congenital malformation, congenital debility, premature birth, injury at birth and other diseases peculiar to early infancy. Congenital debility usually indicates that the physician was uncertain as to the cause of death. Prematurity usually takes precedence over contributing causes of death on a certificate, thereby possibly masking the real cause of death. On the basis of this classification, they believe that the figures from the Department of Vital Statistics are inaccurate for actual frequency of the various causes of death in early infancy.

The infant mortality rates per 1000 live births by years are as follows:

Year	Rate
1935	54
1936	47
1937	48
1938	48
1939	45
1940	32
1941	33
1942	33.5

Stillbirths

Of the 244 stillbirths recorded in the State for 1942, the following causes were given:

Cause	No. of Cases
Unknown	67
Prematurity	44
Toxemia	36
Hemorrhage, maternal	31
Congenital deformity	30
Attributed to cord	19
Difficult delivery	8
Syphilis	3

Hemorrhage, fetal	2
Atelectasis	1
Therapeutic abortion	1
Erythroblastosis	1
Diabetes	1
Total	244

Stillbirths vary from year to year, and no evidence for this variation is apparent. For the last five years the figures are as follows:

Year	No. of Cases
1938	242
1939	211
1940	187
1941	281
1942	244

Previously, New Hampshire has used the definition of a stillbirth recommended by the League of Nations and the International Institute of Statistics — namely, "A dead-birth (stillbirth) is the birth of a (viable) foetus, after at least twenty-eight weeks pregnancy in which pulmonary respiration does not occur; such a foetus may die either: (*a*) before, (*b*) during or (*c*) after birth, but before it has breathed." The statistical definition adopted for use in the United States, and the one accepted by the Children's Bureau, the American Public Health Association and the Bureau of the Census and the one now in use in New Hampshire, is as follows: "A fetus showing no evidence of life after complete birth (no action of heart, breathing or movement of voluntary muscle), if the twentieth week of gestation has been reached, should be registered as a stillbirth."

The differences between these two definitions relate to the period of gestation required and to the criterion for determining life. Since the point of differentiation between liveborn and stillborn is highly controversial, the final decision as to the definition of stillbirth really rests with the obstetrician who is to make the decision in actual practice. If these physicians would voice their opinion on the controversial points involved, it would aid the State Board of Health and Vital Statistics Office in becoming aware of the desires of the medical profession in regard to this subject. Meanwhile in order to make uniformity in reporting for the purposes of comparison, it seems essential that physicians follow the United States definition.

As has been said, there is no single definition of stillbirth in use in the states, the period of gestation differing widely in different states. In Maryland, Missouri and New York City the delivery of any product of conception must be registered; in Delaware there is no definite ruling; in Connecticut registration is not necessary unless the period of gestation is seven months or more. In the majority of states, a fetus that has advanced to the fifth month must be registered.

It is, therefore, evident that there is a lack of comparable bases for analysis. The stillbirth rate for New Hampshire for 1942 is 25.4 per 1000 live births. We have no available figures for the United States except for 1939, which showed 32 stillbirths per 1000 live births. The highest rate was in Mississippi, 51.1, and the lowest was in Washington, 17.5.

In 1936, the Children's Bureau conducted a study of the maternal and fetal conditions associated with stillbirths for the purposes of determining and classifying the causes of death. The study was made on 6750 stillbirths, and certain interesting figures were obtained. It showed, among other things, that 58 per cent of the fetuses die before the onset of labor and 42 per cent during labor; that in the early months of pregnancy deaths before the onset of labor were proportionately higher than deaths during labor; that the greater per cent of fetuses died before labor began in those cases where toxemia, hemorrhage and syphilis were maternal complications, and where deformities were found in the fetus. In this series it was found that the following conditions were associated with stillbirths in the order of frequency: toxemia, ante-partum and intra-partum hemorrhage, cord complication or anomaly, congenital malformation, syphilis and birth injury.

For the most part the causes of fetal death as given on death certificates are maternal conditions with the exception of fetal deformities. Here again the classification of causes of stillbirths varies. The International Commission for Revision of the International List of Causes of Death in 1938 adopted the following classification: Group I, stillbirth caused by disease in, or accident to, the mother; Group II, anomalies of the fetus, placenta or cord; Group III, death of the fetus by injury or other causes; and Group IV, stillbirth due to other causes.

The purpose of the committee in going somewhat into detail on stillbirths is to try to stimulate the interest of physicians in this problem. Any comments as to the definition of a stillbirth or as to the causes of stillbirth will be gratefully received by the committee.

The committee wishes to thank the physicians and hospitals for their continued co-operation in furnishing the data necessary for making this report. Any recommendations that the physicians throughout the State may have to make regarding these annual reports will be greatly appreciated.

The committee wishes to acknowledge with appreciation the co-operation of the Division of Maternal and Child Health of the State Board of Health in furnishing data and personnel in the preparation of this report.

Robert O. Blood, *Chairman*
Benjamin P. Burpee
Marion Fairfield

Dr. Burpee then read a letter from Dr. Mildred A. Chamberlin, acting director of the State Board of Health, which requested an interpretation of a paragraph in the regulations governing the maternity-care program for servicemen's wives. This paragraph read as follows:

> Authorization for medical or hospital care is to be made by the State Board of Health under agreement with the attending physician or the hospital that no payments will be accepted from the patient or family.

The Board of Health believed that the patient should be allowed to contribute, if she so desired, and asked if this was prohibited by the rule in question. After a lengthy discussion, Dr. Peters reported that the Committee on Officers' Reports thought that they did not have enough information to bring in any definite recommendation regarding this matter, other than to recommend that the House of Delegates consider the Government plan for the payment of hospital and medical care of servicemen's wives at the time of deliv-

ery. He moved the adoption of that portion of the report; this motion was carried.

Dr. Burpee said that the State Board of Health would also like advice on the matter of stillbirths. There was still a great deal of argument going on as to what should constitute the definition of a stillbirth. Previously, New Hampshire had used the definition recommended by the League of Nations and the International Institute of Statistics: "A dead birth or stillbirth is a birth of a fetus after at least twenty-eight weeks of pregnancy, in which pulmonary respiration does not occur. Such fetus may die either before, during or after birth, before it has breathed." The statistical definition adopted in the United States and the one accepted by the Children's Bureau, the American Public Health Association and the Bureau of the Census, and the one now in use in New Hampshire, was as follows: "A fetus showing no evidence of life after complete birth, no action of heart, breathing or movement of the voluntary muscles, if the twentieth week of gestation has been reached, it should be registered as a stillbirth." He said that the State Board of Health would like an expression of opinion from the doctors of the State as to what definition of a stillbirth should be used.

Dr. Wilkins asked whether the definition now being used was not satisfactory. Dr. Burpee replied that it was satisfactory to some people but not to others. Any fetus, he said, that was born after the twentieth week was considered a stillbirth. Speaker Parsons asked Dr. Peters whether he had a report on this matter.

Dr. Peters moved that the Committee on Maternity and Infancy take the matter up with the Public Health Department for further clarification. This motion was carried.

Dr. Peters for the Committee on Officers' Reports, further moved that the report of the Committee on Maternity and Infancy be accepted. The motion was carried.

Speaker Parsons said that Dr. Burpee had asked for an opinion from the delegates on the question of medical fees in obstetric work, assisted by government grant, and asked whether there was any further discussion on the matter.

Dr. McGregor said he thought the fee was too low.

Another member asked whether the $15 and the $20 fees were standard ones. Dr. Smith said that the chief objection of the Nashua doctors was that the State Board of Health, the Government and the Children's Bureau were dictating fees, and they did not see why they could not charge more and have the patient pay the difference between the charge that they might make and what the Government would give under this appropriation. If that didn't occur, they would rather not accept any money from the Government or the State Department of Health and take their chances of collecting the regular fee from the patient's family or the patient. For that reason, they were crossing out that agreement at the bottom of the application.

Dr. Smith said further that his authority for the investigation of these cases by the Red Cross was given by the field secretary of the Red Cross in New Hampshire, and also that Dr. Chamberlin in a letter in February asked that the Red Cross investigate. One of the doctors also stated that three women came to him with the blanks for him to sign, applying for aid, who, so far as he knew were perfectly able to pay for the maternity care. He said he did not see why a doctor could not get $50 or more for taking care of the patient, and not have to accept $35 from the Government. For these reasons, Dr. Smith said, the Nashua Medical Society, not an official body so far as the New Hampshire Medical Society was concerned, voted to disapprove the plan.

The meeting then adjourned at 10:30 p.m. until 8:30 a.m., May 11.

The House of Delegates convened at the Hotel Carpenter, Manchester, on May 11, 1943, at 8:30 a.m., with Speaker Charles H. Parsons, of Concord, presiding.

The following members answered the roll call:

The President, *ex-officio*
The Vice-President, *ex-officio*
The Secretary-Treasurer, *ex-officio*
W. J. Paul Dye, Wolfeboro
Francis J. C. Dube, Center Ossipee
Walter F. Taylor, Keene
A. C. Johnston, Keene (alternate for Norris H. Robertson)
Leander P. Beaudoin, Berlin
Arthur B. Sharples, Groveton
Arthur W. Burnham, Lebanon
Leslie K. Sycamore, Hanover
Deering G. Smith, Nashua
Edward V. Putnam, Warner
Clarence E. Butterfield, Concord
Frederick S. Gray, Portsmouth
Anthony E. Peters, Portsmouth
Edwin D. Lee, Exeter
Roland J. Bennett, Dover
George G. McGregor, Durham
B. Read Lewin, Claremont
Emery M. Fitch, Claremont (alternate for Henry C. Sanders, Jr.)

Dr. Putnam presented a report, held over from the day before, on the National Conference for Medical Service. He explained that in conference with some of the other delegates, it had been decided that the basic point seemed to be a question of some sort of liaison officer or commission to be established in Washington for the purpose of mak-

ing contact between the medical groups in any legislative work that might be done. He recommended that the House of Delegates be put on record as favoring the basic principle of having a liaison representative in Washington. This should be done through existing committees, or as it might be deemed best by the American Medical Association. He moved the adoption of this recommendation. The motion was carried.

The report of the delegate to the American Medical Association was then presented by Dr. D. G. Smith.

Report of the Delegate to the House of Delegates of the American Medical Association

The role of the medical profession in the war was the chief subject discussed by the House of Delegates at the ninety-third annual session of the American Medical Association held at Atlantic City on June 8–12, 1942. The meetings were well attended and interesting as usual. Your delegate served as chairman of the Reference Committee on Reports of Officers.

President Frank H. Lahey stated that the public and the medical profession were not aware of the seriousness of the war, and warned that "optimism is one of the things which can lead to our downfall."

President-elect Rankin, most fittingly a colonel in the Army, and since the meeting made a brigadier-general, emphasized that this is a young man's war but the older men left at home will have to do work of equal importance.

Paul V. McNutt, director of the Office of Defense Health and Welfare, stressed the urgency of securing 20,000 physicians to serve with the armed forces. This tremendous feat has now been accomplished and New Hampshire has done her part. Mr. McNutt stated that the medical profession does not realize the magnitude and seriousness of the war, but it seems as if we have begun to do so.

The importance of industrial-health studies and program was emphasized, for aside from actual war medicine, there is no factor that will contribute so much to the war effort as industrial health.

The Council on Medical Education and Hospitals was instructed to develop a program of refresher courses for physicians returning to civilian practice after the war. It was recommended that the Board of Trustees confer with the proper governmental authorities regarding the granting of furloughs with full pay to officers taking these courses.

The Committee on Medical Preparedness was discharged, and a War Participation Committee was established. Your delegate recommends that no change be made in the State Medical Preparedness Committee, but that its duties include those pertaining to participation in the war.

The activities of the National Physicians Committee for the Extension of Medical Service was approved and it was declared the policy of the House of Delegates to encourage this effort and similar efforts with identical purposes.

James E. Paullin of Atlanta, Georgia, was chosen president-elect, and New York was selected as the site of the 1945 session. The 1943 general session has been canceled except for a meeting of the House of Delegates in Chicago next month.

DEERING G. SMITH

Dr. Dye reported for the Committee on Nominations as follows:

OFFICERS

President: James W. Jameson.

Vice-President: Fred Fernald.

Secretary-Treasurer: Carleton R. Metcalf.

Councilors (five-year term): Clifton S. Abbott, Belknap County, and Arthur W. Burnham, Grafton County.

Trustee (three-year term): Howard N. Kingsford.

House of Delegates: speaker, George F. Dwinell; vice-speaker, Ralph W. Tuttle.

Delegate (American Medical Association): Deering G. Smith.

Alternate Delegate (American Medical Association): Emery M. Fitch.

Necrologist: Henry H. Amsden.

STANDING COMMITTEES

Advisory Committee on Jurisprudence: Clifton S. Abbott, W. J. Paul Dye, John J. Brosnahan, Richard E. Wilder, John F. Gile, David W. Parker, Robert J. Graves, Samuel T. Ladd, Jeremiah J. Morin, Henry C. Sanders, Jr., Carleton R. Metcalf, *Chairman*.

Amendments to Constitution and By-laws: James B. Woodman, W. J. Paul Dye, Frederick S. Gray.

Child Health: Colin C. Stewart, Jr., B. Read Lewin, Franklin N. Rogers.

Control of Cancer: George C. Wilkins, Ralph E. Miller, George F. Dwinell.

Maternity and Infancy: Benjamin P. Burpee, Marion Fairfield, John J. Boardman.

Medical Economics: Leslie K. Sycamore, Richard W. Robinson, Francis J. C. Dube.

Medical Education and Hospitals: John P. Bowler, James W. Jameson, Herbert L. Taylor.

Medical Preparedness: Deering G. Smith, Ezra A. Jones, Carleton R. Metcalf.

Mental Hygiene: Benjamin W. Baker, John B. McKenna, Simon Stone.

Public Health: Harris E. Powers, Anthony E. Peters, Clinton R. Mullins.

Public Relations: The President, The Vice-President, The Secretary-Treasurer, Robert J. Graves, Joseph N. Friborg.

Publication: Carleton R. Metcalf, John F. Gile, Emery M. Fitch.

Scientific Work: Carleton R. Metcalf, Frederic P. Scribner, Sven Gundersen.

Tuberculosis: Robert B. Kerr, Clarence O. Coburn, Richard C. Batt.

The report was accepted. Dr. James W. Jameson, of Concord, was elected president, and Dr. Fred Fernald, of Nottingham, was elected vice-president. The Secretary was instructed to cast one ballot for the remainder of officers and committee members, as nominated; this was done, and all were declared duly elected.

Dr. Metcalf moved a vote of gratitude to the members in Manchester who had arranged the details of the meeting; it was so voted.

Under unfinished business Dr. McGregor opened discussion about maternity fees for soldiers' wives, in order to see if there was some way in which the fee schedule could be increased, and to ascertain what fees were being paid in other states. There seemed to be considerable misunderstanding as to whether the agency concerned was a Government or a Red Cross agency. Some doctors were not satisfied with the present fee schedules. The amount did not seem to meet the minimum for the hospital in Exeter.

Dr. Sycamore thought that this question called for more investigation by the Committee on Maternity and Infancy, and added the matter could be left in their hands to make alterations, if possible.

Dr. D. G. Smith spoke as follows:

> I believed that Dr. Burpee would tell more about the plan than he did. It was brought to my attention first about ten days ago. I got the feeling that the thing was rushed through, perhaps slipped through rather rapidly, because there was a copy of a letter sent to the Red Cross in Nashua that was to be sent to every doctor in the State. I, for one, did not receive the letter. I have talked to a number of others who received no letter explaining the plan. The fee list was apparently established by Dr. Burpee — because Dr. Fairfield was on the same committee with Dr. Burpee and said they were consulted — and was rather hurriedly adopted. That was probably why the medical society was not consulted.
>
> A number of men in Nashua think this is an entering wedge for state medicine; that the Government is appropriating this money to the State Board of Health and the Children's Bureau, dictating our fees. They say if the Government is starting now to take care of the soldiers' wives and children, it will be only a short time after the war when they are taking care of the soldiers. The doctors in Nashua are opposed to it. Also, they did not think that the fee schedule is high enough.
>
> Speaking unofficially, in talking with the Superintendent of the Memorial Hospital in Nashua, I discovered that $45 for ten days would not cover the cost of hospital care. It would not take care of a number of things, such as charges for x-ray films, delivery room, medicines, anesthesia, supplies and what not, including care of the baby, and it was said last night that the doctors there are very much opposed to the general idea. Probably we can do little or nothing about it, but the men are especially upset about the dictation as to the fees. It is bad enough on welfare cases, but why should they be dictated to us on other cases? Many of these people have sufficient funds to pay these bills.
>
> The original appropriation, according to Dr. Chamberlin and the head of the Red Cross in New Hampshire, was for the care of soldiers' wives who had no available funds, and this new appropriation is to take care of all soldiers' wives in the four lowest pay groups, regardless of their income.

Dr. Gray said he thought that a discussion of the fee schedules should be carried on by the committee, as previously suggested, and that the House of Delegates should go on record as recommending that an elastic fee schedule be adopted, or at least recommended, whereby in abnormal cases, a higher fee could be charged, and that the top limit be not set as it is in the recommendation.

Dr. Smith said that an alternative proposal was made by Dr. Fairfield, namely, that a grant of $35 toward the doctor's bill and $45 toward the hospital bill be given to the soldiers' wives, if they needed it, and that the balance be taken care of by the individual. He moved that the delegates go on record as being opposed to the present fee schedule for the maternity care of soldiers' wives as inadequate, and as suggesting to the committee that either these rates be raised, or else the $35 to be given to the doctor be considered as a part payment in some cases, and that the doctor be allowed to charge a reasonable balance. The motion was carried.

Dr. Dye, referring to the motion made the previous evening for expediting the medical insurance plan, asked for clarification of how the matter now stood. It was voted then that the Committee on Medical Economics and the officers be a committee to formulate a plan and to present such a plan at the earliest possible moment to the House of Delegates. Was there, he asked, a further provision that this plan be sent to each member of the House prior to said meeting, so that the members could look it over and discuss the question intelligently?

Speaker Parsons replied that no definite motion was made that that plan be specifically referred to each member, but it was understood that it would be; otherwise, it would be impossible to consider the matter intelligently.

The second and final meeting of the House of Delegates was adjourned at 9:15 a.m.

CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

Weekly Clinicopathological Exercises

FOUNDED BY RICHARD C. CABOT

TRACY B. MALLORY, M.D., *Editor**

BENJAMIN CASTLEMAN, M.D., *Acting Editor*

EDITH E. PARRIS, *Assistant Editor*

CASE 29391

PRESENTATION OF CASE

A twenty-seven-year-old medical student was admitted to the hospital because of massive bloody stools.

The patient was in good health until two days prior to entry when he developed coryza, photophobia and slight sore throat. There was no muscle pain or stiffness. His bowels, which had moved normally the day before, had not moved on that day. The following day, while on a train, he noted that he was sweating more than usual and felt chilly. He had marked tenesmus with two unsuccessful attempts to pass a stool. The third time there was a pinkish spotting of the toilet. He felt weak and faint. About midnight that evening, two hours before entry, he had a great desire to defecate, broke out in a cold sweat and had a massive liquid, tarry and bloody, foul-smelling stool, with a volume of about "1½ to 2 pints." He felt weak and nauseated and vomited a yellow mucoid material in which no coffee grounds or blood was seen. He had had no pain, chills, fever, jaundice or other gastrointestinal or genitourinary symptoms. The upper respiratory infection was still present.

His appetite had always been good, and his weight steady. He had a "softening of the spine" at eighteen, for which he wore a brace for three months. Following a maxillary sinus operation, two and a half years before entry, he had had a tarry stool, but he had experienced no other episodes of melena until his present illness. There was no history of cough, night sweats, chest pain, hemoptysis, dyspnea, orthopnea or heartburn.

Physical examination showed a well-developed, well-nourished man in no distress. The chest was somewhat barrel shaped and hyperresonant. The abdomen was scaphoid, entirely soft and nontender. Peristalsis was normal. The liver edge could be felt and percussed two fingerbreadths below the costal margin in the anterior axillary line. Rectal examination showed some tarry material on the examining finger.

*On leave of absence.

The blood pressure was 90 systolic, 70 diastolic. The temperature was 99°F., the pulse 96, and the respirations 20.

Examination of the blood revealed a red-cell count of 4,150,000 and a white-cell count of 11,700. The blood protein was 5.4 gm. per 100 cc., the chloride 92.6 milliequiv. per liter. The prothrombin time was 22 seconds (normal, 20 seconds), and the hematocrit was 31 per cent. The urine was normal. The stools gave a ++++ test for guaiac. The aspirated gastric content had free hydrochloric acid and was guaiac negative.

During the physical examination, shortly after admission, he had two large, loose, foul stools of tarry material admixed with red blood. He became pale and felt faint. He was given 1000 cc. of whole blood intravenously. The bleeding subsided, with elevation of the blood pressure.

The following day, the bleeding having ceased, a gastrointestinal series was done. This showed a normal esophagus, and there was no evidence of a hiatus hernia; the stomach and duodenal bulb were normal.

The third day, when plans were being made for further study, the patient had another massive, grossly bloody stool and showed "early evidence of shock." An abdominal exploration was performed immediately.

DIFFERENTIAL DIAGNOSIS

DR. ROBERT R. LINTON: We have a history of a twenty-seven-year-old, apparently healthy young man who suddenly developed massive bleeding in the rectum. The bleeding consisted not entirely of old blood, characterized by tarry material, but also of some fresh blood. The first thing one thinks of, of course, is a bleeding duodenal ulcer. There usually is no fresh blood in the stools following bleeding from a duodenal ulcer, but on the other hand it may occur. It is true that he had no history of previous ulcer symptoms, and there is nothing to suggest that he had a duodenal ulcer; nevertheless, duodenal ulcers may suddenly bleed or perforate without any preliminary symptoms suggestive of the disease.

The physicians looking after this patient seem to me to have been courageous in giving a gastrointestinal series the morning following so much bleeding. This may have been all right, but it is not the way we have been taught to handle massive hemorrhage supposedly from duodenal ulcer. They may have thought of some other diagnosis and felt free to go ahead. At any rate, their judgment was correct, since there was obviously no lesion involving the stomach or duodenum. At the same time they ruled out esophageal varices, which one would have to consider as a possible diagnosis.

The likelihood that there were esophageal varices is very small because of the fact that there was no vomiting of blood, which practically always occurs if there is bleeding from this source. It seems to me that one has to accept the x-ray report that there was nothing wrong with the stomach and duodenum, so that the bleeding did not come from high in the gastrointestinal tract.

What other conditions can produce massive bleeding? I suppose that a tumor of the jejunum is a possibility. Tumors of the jejunum are rare. I have never happened to see one that bled so much as this one did, and usually intestinal obstruction is associated with it, which this man did not have. So I do not see how we can incriminate the jejunum. Then we come down farther to the ileum, where one must consider two conditions seriously — intussusception and a Meckel's diverticulum. Intussusception is unusual in a man of twenty-seven. It usually occurs in infants and in children under five; there was also too much bleeding for intussusception. Bleeding from an ulcer in a Meckel's diverticulum again is unusual in a patient of twenty-seven. Such lesions do occur, however, at that age but are much commoner under the age of ten. The other conditions that we should consider are carcinomas involving the large bowel. The cecum, for instance, is a common site for bleeding from the rectum; but again, massive hemorrhage from tumors in the cecum usually does not occur: it is usually a continued, small amount of bleeding. The same is true of carcinoma of the colon, in which one observes less bleeding than in carcinoma of the cecum. The history is of interest in that it states that the patient had marked tenesmus with two unsuccessful attempts to pass a stool, which suggests that he had some degree of intestinal obstruction. Apparently this did not amount to much because within a few hours he did defecate a large amount of bloody material. So I do not believe that he had an intussusception or carcinoma of the colon, with bleeding from either of these conditions. Lymphoma is another cause one must consider. Because the stool contained old and fresh blood I should expect such a lesion to be in the terminal ileum or the right colon. Other conditions that I have read about but have not seen, such as congenital hemangioma involving some part of the gastrointestinal tract, may cause bleeding. If that is what it is, the diagnosis would be purely a guess on my part, and for that reason I am going to rule it out in the differential diagnosis.

In reviewing this case it seems to me that, since the gastrointestinal series was negative and since the patient passed large amounts of blood that was both old and fresh, indicating that the hemorrhage arose somewhere in the middle of the intestinal tract rather than at either end of it, and since the lesion was asymptomatic in that he had had no preliminary gastrointestinal symptoms previous to this episode except for the one time after the sinus operation when he passed some blood by rectum, I am going to make a diagnosis of an ulcer in a Meckel's diverticulum. A Meckel's diverticulum is usually asymptomatic unless it produces signs of intestinal obstruction, becomes acutely inflamed or develops an ulcer, which erodes a blood vessel and produces bleeding similar to that of a duodenal ulcer. The ulcer that forms is secondary to the fact that some of them contain gastric mucosa, which secretes hydrochloric acid. Since the mucosa of the ileum has no neutralizing secretion against this acid, it is apt to produce an ulceration similar to that of peptic ulcer, either at the base of the diverticulum or in the adjacent ileum.

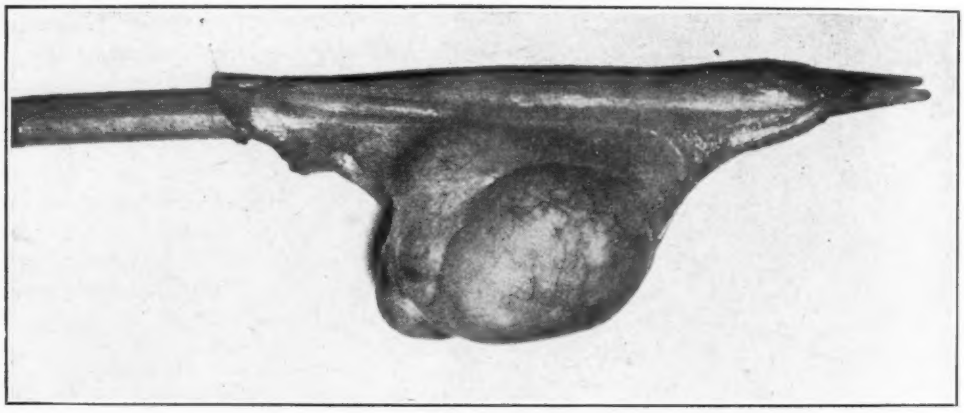

FIGURE 1.

DR. JOSEPH C. AUB: Would Dr. Linton consider the possibility of "walking" typhoid fever? He was a medical student and had been miserable for two days.

DR. LINTON: It was my impression that cases of typhoid fever do not bleed. They perforate, but do not bleed.

DR. AUB: They sometimes bleed.

DR. J. H. MEANS: I should like to mention one patient who had a massive gastrointestinal hemorrhage, the source of which was not found until operation. He had gastric varices without esophageal varices. They did not show in the x-ray; in fact they were not seen at gastroscopy.

DR. BENJAMIN CASTLEMAN: Is it not true that the patient had appreciable symptoms before the bleeding?

DR. MEANS: Yes. Such a diagnosis is most unlikely, but if you are considering all the possible explanations that might be mentioned.

DR. LINTON: I may be making a mistake by passing over the diagnosis of duodenal ulcer, but on the other hand this seems to be a very unusual case and is more likely to have been due to something lower in the gastrointestinal tract.

DR. FRANCIS D. MOORE: How about polyposis of the colon?

DR. LINTON: That is a possibility. However, I should not expect the bleeding to be so massive.

DR. MOORE: On the service we followed much the same reasoning that Dr. Linton has. We knew that this man might start to bleed massively again, which would necessitate operation. If we did operate, we wanted to locate the lesion, if possible. That is why we asked for the gastrointestinal series, although we realized that it carried some hazards. When he started to bleed again, we operated through a lower abdominal midline incision and immediately saw blood in the small bowel. This confirmed our suspicion that the blood was coming from above the ileocecal valve, and we shortly found that it was emanating from a tumor in the ileum in the region where one expects to find a Meckel's diverticulum. The tumor was about the size of a lemon, and we thought that it was associated with a Meckel's diverticulum. The tumor was resected, and the patient has done extremely well.

CLINICAL DIAGNOSIS

Meckel's diverticulum, with ulcer.

DR. LINTON'S DIAGNOSIS

Meckel's diverticulum, with bleeding ulcer.

ANATOMICAL DIAGNOSIS

Neurofibroma of ileum.

PATHOLOGICAL DISCUSSION

DR. CASTLEMAN: This is a photograph of the specimen (Fig. 1), showing the tumor through the serosa. It was a lobulated, soft, somewhat gelatinous intramural tumor about 5 cm. in diameter. There was no Meckel's diverticulum. The usual benign intramural tumors of the gastrointestinal tract are the leiomyomas and neurofibromas; the malignant ones are the leiomyosarcomas, neurogenic fibrosarcomas and lymphomas. This one proved to be a neurofibroma. These tumors usually ulcerate in the center and often produce massive bleeding.

DR. LINTON: Did you find the bleeding point?

DR. CASTLEMAN: We did not find the bleeding point. The specimen was already sectioned when received in the laboratory.

DR. MOORE: After taking a picture of the specimen we opened it and found the bleeding point to be a dilated vein about twice the size of the lead of a pencil. Where the tumor was close to the mucosa the vein had ruptured into the lumen of the bowel.

CASE 29392

PRESENTATION OF CASE

A forty-five-year-old housewife was admitted to the hospital about midnight because of severe abdominal pain. The patient was too sick to give a complete history.

About thirteen hours before admission, soon after lunch, the patient developed severe pain in the upper abdomen and back, associated with nausea and vomiting. That evening, while visiting her husband, who was in a hospital, she collapsed. She was seen by a physician who sent her to this hospital.

For the past twenty-five years she apparently had had recurrent attacks of pain in the upper abdomen, associated with nausea and vomiting, which had been interpreted as being due to gallstone colic.

Physical examination showed a lethargic, ill-appearing, moderately obese woman, complaining of pain in the upper abdomen. The skin was moist. There was questionable jaundice of the skin and scleras. There was an apical systolic murmur, but the heart was otherwise normal. The lungs were clear. There were spasm, resistance and a sense of a mass in the right upper quadrant, with tenderness in the right lower quadrant, the left upper quadrant and the left costovertebral angle. Peristaltic activity was somewhat reduced but essentially normal. There was a suprapubic abdominal mass that was more prominent on the right than on the left and still present after catheterization. On vaginal examination this mass was believed to be a fibroid uterus.

The blood pressure was not obtained. The temperature was 99°F., and the pulse 100; the respirations were normal.

Examination of the blood revealed a hemoglobin of 18.7 gm., and a white-cell count of 9200. The urine was dark amber, cloudy and acid, with a specific gravity of 1.019 and a ++++ test for albumin and bile. The sediment contained many granular, hyaline and cellular casts, and occasional red cells, 10 white cells and 20 epithelial cells per high-power field. A urine culture was negative.

An x-ray film of the abdomen showed both kidneys to be normal in size, shape and position. There were several areas of calcification having the appearance of calcified lymph nodes near the right transverse processes of the third lumbar vertebra. No shadows suggesting renal or ureteral stones were seen. There were no dilated loops of small bowel. Films taken in the upright position showed no air under the diaphragm.

Ten hours after admission an exploratory laparotomy was performed.

Differential Diagnosis

Dr. Richard H. Sweet: In this patient, the onset was acute, the story short and the illness severe, the outstanding symptoms being abdominal pain going through to the back, and nausea with vomiting, the collapse following later. In the past history we learn that for twenty-five years she had had recurrent attacks of upper abdominal pain associated with nausea and vomiting, which had been interpreted as being due to gallstone colic, but I am sure you are all acquainted with the fact that nausea, or at least vomiting, is not an outstanding symptom of the ordinary uncomplicated gallstone attack. Very frequently we see gallstone colic without any vomiting. This patient, however, had vomiting with all the attacks.

In a physical examination made at about 1:00 a.m., I think that most of us would find it difficult to decide whether the patient was jaundiced; so I do not attach much significance to that finding until later when we discover that she had a large amount of bile in the urine.

It is interesting that this patient had widespread tenderness; in fact the only place she did not have any was in the left lower quadrant. Thirteen or more hours after the sudden onset of the abdominal pain and the pain in the back, there were marked physical findings related entirely to the abdomen. In fact the tenderness was so widespread that it suggests peritonitis. The maximal tenderness and spasm were in the right upper quadrant.

The blood pressure is not recorded. It might have been of some help.

The white-cell count was low for a person as ill as this, provided she had an inflammatory process. The hemoglobin indicates that she had not been suffering from blood loss. Since the urine gave a ++++ test for bile, its presence cannot be doubted. I presume that the specimen was voided; hence the few red cells, the 10 white cells and 20 epithelial cells have little or no significance.

Whoever saw this patient thought of a perforated ulcer and had an abdominal film taken in the upright position, which did not show any gas under the diaphragm. Although, of course, there are plenty of cases in which this does not occur, the presumption is that we are not dealing with a case of perforated ulcer. Furthermore, the attacks of upper abdominal pain that the patient had had for twenty-five years do not sound like those due to ulcer. The physician in charge of the patient also thought of small-bowel obstruction, but there were no dilated loops.

I presume that renal or ureteral disease was considered as well. All abdominal surgeons have at times seen people with renal or ureteral disease, caused by stone or infection, in whom the spasm and tenderness and the superficial behavior were such that a diagnosis of peritonitis was made. I remember being called one night to see a patient at the Deaconess Hospital. The medical man said, "This girl has peritonitis and something should be done about it." The abdomen was so spastic that it was boardlike, and yet there were perfectly normal peristaltic sounds. She had an acute renal shutoff, with secondary infection and fever. I presume, however, that this is not a case of renal or ureteral disease. There was no x-ray suggestion of a stone, although, of course, it might not have been visible. A report on a catheter specimen of urine would be helpful.

May we see the x-ray films?

Dr. Milford D. Schulz: These films show no evidence of gas in the peritoneal cavity. There are calcified mesenteric lymph nodes. I see no evidence of biliary or renal calculi. The preperitoneal fat line seems to be preserved. If she had a localized peritonitis it could not have been of long standing.

Dr. Sweet: This patient did not behave the way patients with perforated ulcer usually do. She had pain but was still well enough early that evening to visit her husband, who was in a hospital. If it was a perforated ulcer, there must have been a tiny leak that became temporarily sealed off, so that she was able to walk about for five or six hours, and then underwent a massive rupture, which produced collapse. This is a possibility, but a rather unusual one, I should say.

Was this an ordinary attack of gallstone colic? I do not believe so. Of course some people react

to pain much more severely than others, and I presume that the collapse occurred because the patient was suffering a terrific amount of pain. We do not know what the blood pressure was. I assume from the description, however, that she really was in collapse. Because of the fact that nausea and vomiting were outstanding symptoms, I shall exclude gallstones as the immediate cause of the difficulty. I shall also exclude acute cholecystitis, because she had an essentially normal temperature and a normal white-cell count after thirteen hours. Acute cholecystitis, as you all realize, is one of the few conditions that will cause excessively high white-cell counts, sometimes quite early in the course of the disease.

Could she have something related to the intestinal tract other than perforation of an ulcer? We cannot exclude small-bowel obstruction, even in the absence of dilated loops by x-ray, but it would be most unusual for this condition to produce pain of that severity and lead to sudden collapse of the patient. I shall exclude it.

How about mesenteric thrombosis? The patient was rather young. Furthermore, most of the cases usually have a very high white-cell count, and the pain is not quite typical.

There is one acute abdominal emergency that I have not touched on which fits the whole picture and even ties in with the history of gallstone attacks—namely, acute pancreatitis. A prodromal attack of pain is characteristic. The pain in pancreatitis is always upper abdominal, and it frequently goes to the back, a great many patients complaining more of pain in the back than anything else. Most of the patients with pancreatitis whom I have seen would not be described as lethargic; early in the course of the disease they are apt to be writhing in bed, complaining of pain in the back and upper abdomen. The white-cell count is not inconsistent; patients with acute pancreatitis often have relatively low counts, and early in the disease they often have low temperatures. The physical examination is consistent with acute pancreatitis—namely, tenderness in the left upper quadrant, right upper quadrant and right lower quadrant.

I have not considered acute appendicitis because the onset was severer than one would expect in that condition. Furthermore, the distribution of the tenderness, as well as the maximal tenderness in the upper rather than in the lower abdomen, seems to exclude it.

For reasons mentioned before, I have excluded intra-abdominal hemorrhage from such conditions as ruptured ectopic pregnancy and accident connected with an abdominal pelvic tumor, such as rupture of a cyst. So with the history as given, and with the physical signs as stated, I shall incline toward a diagnosis of acute pancreatitis to explain the present illness. On the basis of the past history we must also conclude that she had cholelithiasis.

Clinical Diagnosis

Acute pancreatitis.

Dr. Sweet's Diagnoses

Acute pancreatitis.
Cholelithiasis.

Anatomical Diagnoses

Acute hemorrhagic pancreatitis.
Cholelithiasis.
Choledocholithiasis.

Pathological Discussion

Dr. Benjamin Castleman: At operation the surgeon found a distended gall bladder, to which the omentum was adherent. He inserted a trocar into the gall bladder, and some light-colored bile came out. He was able to scoop out several stones from the cystic duct, following which the bile became normal in color. The peritoneal cavity contained slightly blood-tinged fluid and several small areas of fat necrosis. He believed that the patient was too sick to do anything more. A drainage tube was placed in the gall bladder. The patient died a few hours later.

At autopsy we found an extensive hemorrhagic pancreatitis. The whole pancreas was involved, and there were areas of fat necrosis throughout the omentum and peritoneum. The cystic duct was markedly thickened and dilated and contained numerous stones, which apparently the surgeon was unable to remove. The common duct was also thickened and markedly dilated and was filled with faceted stones along its entire course. Stones were also present in the intrahepatic ducts.

In this case I am sure that the cause of the pancreatitis was a blockage of the exit of bile, with bile entering the pancreatic duct. It is satisfying to have a case of acute pancreatitis in which we are able to determine the exact cause; in many cases we find no stones or other cause for the pancreatitis. There was no squamous-cell metaplasia of the epithelium of the pancreatic ducts.

Dr. Edward B. Benedict: Do you mean that pancreatitis without any gall-bladder disease occurs in a great many cases?

Dr. Sweet: The late Dr. Daniel F. Jones* looked that up some years ago and found that 40 per cent of the cases occurred in the absence of stones.

*Jones, D. F. Acute pancreatitis. *Boston M. & S. J.* 186:337-342, 1922.

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The Journal does not hold itself responsible for statements made by any contributor.

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BY THEIR FRUITS—

The time has come when the Victory Gardener, at long last, can count his chips and see if the game he has been playing this departed summer has gone for him, or against him. Discounting the element of luck, present in all our enterprises in inverse proportion to the amount of time spent in planning and in executing our plans, he should be able to mark up a good score against his opponents in the game—poor soil, pests and plant disease, weeds, drought and indolence. Of these the last, perhaps, is the most important. Many an inspired spring planter has found his enthusiasm wilting under a July sun and the necessity for regular cultivating, weeding, spraying, dusting and watering.

The number of seeds that have gone into the ground this planting season must certainly have been astronomical; Nature herself rings the bell on too gross overproduction, else we might be reminded of the geometric computation concerning the fly's eggs: If every egg hatched and produced a fly and these flies' eggs hatched and produced flies, and so on through the creatures' generations, how large would the resulting fly mass be in a specified time? Instead we are reminded of the parable of the sower, or perhaps, facetiously, of Jack Benny's description of his potato crop—some were the size of marbles, some were as big as peas, and there were quite a number of small ones.

Be their productive ratio as it may, the number of war gardens that have burst into being in the backyards and waste spaces of America, when properly cultivated and harvested, must add an appreciable increment to our precarious food supply. They have done more than that; they have drawn many thousands of indoor workers into the most healthful recreation known, bar none, and have added greatly to hundreds of thousands of individuals' previously meager knowledge of the methods of production and relative values of the various vegetable foods.

Fortunately for us, information on gardening and on the storing of crops has been freely available. It is essential, however, that the latter should be properly carried out. Short cuts and slipshod methods in the preserving of vegetables and fruits, particularly in home canning, may lead to serious dangers, as has been indicated in Dr. Getting's* excellent and timely articles in recent issues of the *Journal*. Although botulism is relatively uncommon in the East, it is by no means unknown, and is usually the result of the underprocessing of nonacid foods. Foods put up at home by the cold-pack method should be reboiled for ten to fifteen minutes after opening and before eating

*Getting, V. A. Epidemiologic aspects of food-borne disease. *New Eng. J. Med.* 228:754-762, 788-796 and 823-830, 1943.

or tasting. The much commoner staphylococcal enterotoxin is heat stable, but is much likelier to be found in canned foods that have spoiled after opening than to have survived ordinary processing.

SEVENTY-FIVE YEARS OF ACHIEVEMENT

THE Metropolitan Life Insurance Company celebrated its seventy-fifth anniversary last spring. Founded in March, 1868, it has witnessed the greatest period of progress in public health that the world has ever seen and has, particularly in the latter half of the period, been a factor in carrying on and in helping to initiate many of these advances. In the *Statistical Bulletin* for March, 1943,—an anniversary number,—the company has reviewed these seventy-five years of progress.

In 1868 the death rate for New York City was 28 per 1000 persons, reaching 40 in some wards, and even higher figures in individual blocks. As a result of this high mortality, particularly among children, the average length of life was correspondingly low—about forty years, as against sixty-four years today. In the underprivileged classes of society worse than the average conditions prevailed.

Public-health organizations, however, soon began to put into effect the knowledge gained from the discoveries of Pasteur and the experiments of Lister, and although gains were at first slow, medical progress really began to hit its stride with the turn of the century. In 1909 the company launched an organized welfare program, and from that time on its health program, combining nursing and educational activities among policyholders with co-operation and support of existing health organizations, has been identified with most of the health advances made in this country and Canada.

The statistical experience among industrial policyholders of the company exemplifies the progress that has been made. In 1911 the standardized death rate from all causes among these policyholders between the ages of one to seventy-four was 13.5 per 1000, whereas in 1942 it was 6.1. During the same period the average length of life in the group has increased from less than forty-seven years to about sixty-four years. The infant death rate has dropped to about one fifth of its 1920 figure; the mortality in the age group from one to fourteen has improved four fifths since 1911; tuberculosis, with a death rate of more than 220 per 100,000 in 1911, has now a rate of scarcely more than 40; and between the years 1937 and 1941, the mortality from pneumonia has been reduced by 54 per cent. The current death rate from appendicitis is the lowest in history; and the mortality from all accidents, even including those due to automobiles, has been reduced. In fact, if war could be banished, one might say that the people of this country alone were facing a millennium.

The activities of the welfare program deserve a brief review. Most vital has been a nursing service to policyholders, now reaching nearly eight thousand communities. In the field of health education, about one and a quarter billion pamphlets have been distributed, and the company's motion pictures have been viewed by more than one hundred and twenty-five million persons. The well-known demonstration at Framingham, Mass., showed how a community could solve its tuberculosis problem; the demonstration at Thetford Mines, Quebec, reduced infant mortality by two thirds in three years; and important advances in the treatment of pneumonia have been aided by the Influenza-Pneumonia Commission, organized in 1919.

Its seventy-five years of achievement have certainly justified the high respect in which this organization is universally held.

MEDICAL EPONYM

Gilbert's Disease

This was first described by Professor A. Gilbert (1858–1927) at a meeting of the Société médicale des hôpitaux de Paris on July 27, 1900, in a paper entitled "De l'ictère familial: contribution a l'étude de la diathese biliaire [Familial Jaundice: A contribution to the study of the biliary diathesis]," in collaboration with Drs. J. Castaigne and P. Lereboullet, in which a number of cases of jaundice of diverse origin are described. Their paper appeared in *Bulletins et mémoires de la Société médicale des hôpitaux de Paris* (17:948–959, 1900). A portion of the translation follows:

> Whatever else the nature of this hereditary predisposition to infection of the biliary passages may be, it seems to us to be proved by the facts that we have reported. Not only lithogenic angiocholecystitis, then, is hereditary; simple or cirrhogenous angiocholitis may equally be so, and by reason of this predisposition, one may meet in a single family with the various clinical types, the principal characteristics of which we have described.

In subsequent papers he further describes simple, nonhemolytic familial jaundice — for example in an article entitled "La cholémie simple familiale [Simple Familial Cholemia]," in the *Gazette hebdomadaire de médecine et de chirurgie* (7:889–897, 1902) he states: "Familial cholemia is extremely common. . . . It is a familial, hereditary disease."

R. W. B.

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

COMMUNICABLE DISEASES IN MASSACHUSETTS FOR AUGUST, 1943

Résumé

Diseases	August 1943	August 1942	Seven-Year Median
Anterior poliomyelitis	24	2	9
Chicken pox	123	121	118
Diphtheria	7	12	12
Dog bite	1093	1031	1068
Dysentery, bacillary	14	4	15
German measles	72	83	31
Gonorrhea	374	479	433
Measles	346	296	281
Meningitis, meningococcal	42	18	4
Meningitis, other forms	5	1	*
Meningitis, undetermined	4	1	*
Mumps	137	271	157
Pneumonia, lobar	76	121	120
Salmonella infections	22	13	10
Scarlet fever	250	224	125
Syphilis	418	354	367
Tuberculosis, pulmonary	274	265	289
Tuberculosis, other forms	25	19	27
Typhoid fever	3	9	11
Undulant fever	5	4	4
Whooping cough	286	673	533

*Pfeiffer-bacillus meningitis only other form reportable previous to 1941.

Comment

The poliomyelitis situation in Massachusetts is of special interest at the present moment owing to the relatively large number of cases occurring in certain other states. The incidence in August was about two and a half times the seven-year median, and subsequent weeks will probably show a still further increase. Nevertheless, the season during which poliomyelitis usually occurs is now so far advanced that the chances are against the occurrence of a real epidemic this year.

Meningococcal meningitis has shown the seasonal decline that was expected, although the level is higher than in the average year. The August figures are less than half those of June. Salmonella infections, on the other hand, show an increase over those of the last three months. These were distributed through eleven towns and do not represent any major outbreak.

Geographical Distribution of Certain Diseases

Anterior poliomyelitis was reported from: Arlington, 1; Attleboro, 3; Beverly, 1; Boston, 1; Braintree, 1; Brockton, 1; Cambridge, 1; Chelsea, 1; East Longmeadow, 1; Everett, 1; Fall River, 1; Lynn, 1; Marblehead, 1; Medfield, 1; New Bedford, 2; New Marlboro, 1; Norton, 1; Palmer, 1; Quincy, 2; Waltham, 1; total, 24.

Anthrax was reported from: Woburn, 1; total, 1.

Diphtheria was reported from: Amesbury, 1; Athol, 2; Dighton, 1; Somerville, 2; Westport, 1; total, 7.

Dysentery, bacillary, was reported from: Boston, 1; Chelsea, 3; Holyoke, 9; Worcester, 1; total, 14.

Encephalitis, infectious, was reported from: Everett, 1; total, 1.

Malaria was reported from: Boston, 1; Chicopee, 1; Concord, 1; Fort Banks, 4; Fort Devens, 5; Milford, 1; Springfield, 1; total, 14.

Meningitis, meningococcal, was reported from: Athol, 1; Attleboro, 1; Barnstable, 1; Boston, 6; Brookline, 1; Bridgewater, 2; Camp Edwards, 4; Chelmsford, 1; Chelsea, 1; Everett, 1; Fitchburg, 1; Fort Devens, 2; Gloucester, 1; Holbrook, 1; Holyoke, 2; Lawrence, 2; Longmeadow, 1; Lowell, 2; Lynn, 2; Malden, 1; Medford, 1; Middleboro, 1; Montague, 1; Southbridge, 1; Swampscott, 1; Taunton, 2; Weymouth, 1; total, 42.

Meningitis, other forms, was reported from: Foxboro, 1; Malden, 1; Pittsfield, 1; Springfield, 2; total, 5.

Meningitis, undetermined, was reported from: Boston, 1; Springfield, 1; Worcester, 2; total, 4.

Salmonella infections were reported from: Adams, 1; Beverly, 2; Everett, 1; Haverhill, 4; Marblehead, 3; Melrose, 1; Northfield, 5; Salem, 2; Somerville, 1; Winchester, 1; Worcester, 1; total, 22.

Septic sore throat was reported from: Boston, 5; Pittsfield, 1; total, 6.

Tetanus was reported from: Boxboro, 1; Falmouth, 1; Somerville, 1; total, 3.

Typhoid fever was reported from: Ludlow, 1; Shirley, 1; North Adams, 1; total, 3.

Undulant fever was reported from: Adams, 1; Brookline, 1; Hopkinton, 1; Lowell, 1; Whitman, 1; total, 5.

CONSULTATION CLINICS
FOR CRIPPLED CHILDREN

Clinic	Date	Clinic Consultant
Lowell	October 1	Albert H. Brewster
Salem	October 4	Paul W. Hugenberger
Haverhill	October 6	William T. Green
Brockton	October 14	George W. Van Gorder
Worcester	October 15	John W. O'Meara
Pittsfield	October 20	Frank A. Slowick
Springfield	October 22	Garry deN. Hough, Jr.
Fall River	October 25	Eugene A. McCarthy
Hyannis	October 26	Paul L. Norton

BOOK REVIEWS

Clinical Laboratory Diagnosis. By Samuel A. Levinson, M.D.; and Robert P. MacFate, Ch.E., M.S., Ph.D. Second edition. 8°, cloth, 980 pp., with 156 illustrations, 92 tables and 15 plates. Philadelphia: Lea and Febiger, 1943. $10.00.

The second edition of this book lives up to the expressed purpose of the first edition, namely, to present to the student, intern, practicing physician and technician a suitable review of clinical laboratory diagnosis to meet general needs.

The subject matter has been brought up to date, new text has been added, and the special appendix on the course in clinical pathology at the University of Illinois College of Medicine has been deleted to provide space. New items have been added relating to water metabolism and acid-base balance. Recent blood clinical methods for the determination of ascorbic acid, the sulfonamides, thiocyanate, alkaline and acid phosphatase, amylase and other substances are described. The chapter on hematology has been enlarged to make room for a discussion of bone-marrow findings, Rh factor, blood volume and other items. The inclusion of chapters on water and milk analysis and toxicology and legal medicine, as well as histological technic, skin tests and other biologic examinations, adds value in that in a single volume one has at hand a ready reference book on virtually any type of examination with which clinical laboratory diagnosis may be concerned in its broadest scope. A brief and concise review of pertinent anatomical, physiologic, and biochemical considerations is of great value in illuminating the background of the accumulation of knowledge that is to be interpreted by means of findings obtained by specialized technical procedures.

A separate section on laboratory methods in pediatric procedure is cited as an example of the well-planned arrangement of subject matter, which offers ready access to the source of the specific information one may be seeking.

Methods described in blood clinical analysis make use of procedures which, so far as possible, can be adapted for either colorimetric or photometric determinations. This simplification and adaptation of methods is particularly of advantage in these times when new apparatus is difficult, if not impossible, to obtain.

The chapter on bacteriology is arranged in an orderly fashion; Bergey's nomenclature and classification are followed. The description of appropriate methods to be used in the bacteriologic examination of specific materials is particularly valuable to the inexperienced technician. The charts of the characteristics and classification of the commoner bacteria are a useful feature.

It is interesting to note the complete exposition covering the function and examination of saliva and pathologic conditions of the mouth. In this section, as well as those on the stomach and intestines, are old and tried methods of examination, which, although little used nowadays, have their value.

In the chapter on immunology and serology, serologic tests for syphilis include the Kolmer complement-fixation test, the Kahn precipitation test and the Kline microscopic slide-precipitation test. The reviewer believes that the Hinton test deserves at least mention as an acceptable serologic test for syphilis.

This comprehensive treatise is concise and clear in structure and in detail. The charts, illustrations and tables are well chosen for their purpose, and add much to the general usefulness of the book. It is highly recommended to those for whom it was written — the student, the intern, the practicing physician and the technician. In addition, it should be in the working library of every clinical laboratory.

Surgical Practice of the Lahey Clinic, Boston, Massachusetts. 8°, cloth, 897 pp., with 376 illustrations. Philadelphia and London: W. B. Saunders Company, 1941. $10.00.

In this volume are collected seventy-eight papers by the staff of the Lahey Clinic, Boston, previously published in American journals in the years 1937–1941. Nearly half are from *Surgical Clinics of North America.* According to the preface by Dr. Lahey, it is a cross-section of the methods in use in his clinic, representing an attempt at standardization, which he believes is largely responsible for improved end results. Written by twenty-two contributors, the papers are necessarily of uneven merit.

Nine papers by Dr. Lahey and collaborators on the thyroid gland are authoritative, and one on esophageal diverticula is based on his almost unique experience with such lesions. Articles on laryngoscopy, empyema, pulmonary lobectomy, branchial cysts and carcinoma of the breast are routine descriptions of technic. Twenty-one contributions by Lahey, Cattell and their associates on the stomach, duodenum, colon and rectum describe methods that they have proved to be effective. It may be noted that no mention is made of the Miller–Abbott tube, whose advent bids fair to supplant some of the methods described. Four papers on the bile duct are of routine nature, and four gynecologic topics, three on the kidney and prostate and six on orthopedic subjects necessarily cover but little of those fields. Two important and useful groups are those by Horrax and Poppen on neurosurgery, and ten papers by Sise and his collaborators on anesthesia — two fields of comparatively recent development in which the work of the Lahey Clinic has been conspicuous.

The illustrations are numerous; many of them excellent, but some of the line drawings are quite inadequate and a few are positively misleading. It is regrettable to be obliged to say that the literary quality of some of these papers leaves much to be desired, and that proper editorial supervision has not been exercised. There are instances of clumsy phrasing, in some of which, apparently, a meaning is expressed precisely the opposite to that intended. Did space permit, it would be informative to inexperienced writers to list these solecisms. A few are as follows: ". . . the malignancy is now given to the pathologist . . ." (p. 460); ". . . the removal of a large portion of malignancy . . ." (p. 481); and ". . . the entire bone-flap may be safely elevated if the staphylorraphy [*sic*]

has been used . . ." (p. 734) an expression which leaves the reader mystified concerning the connection between parasagittal meningiomas and suture of the cleft palate. The words "radicability" (p. 481) and "pre-medicant" (p. 708) seem to represent additions to the English language.

How often reviewers must make unfavorable comparisons between the literary quality of American writers and their British cousins! A eulogist of the late Sir Wilfred Trotter remarks: "He used the English language as he used his hands, — with a delicate precision born of constant striving toward control of his medium" (*Brit. J. Surg.* **27**:625, 1940). Are not surgical and literary skill compatible?

Clinical Significance of the Blood in Tuberculosis. By Gulli L. Muller, M.D. 8°, cloth, 516 pp., with 52 tables and 19 charts. New York: The Commonwealth Fund, 1943. $3.50.

Tuberculosis workers and students of hematology will value this scholarly book. The author has analyzed nearly seven thousand blood examinations on 1000 patients admitted consecutively to the Rutland State Sanatorium, and has brought together and correlated the mass of literature on the subject.

Good opening chapters on the physiology of the blood-forming organs and on the tissue response in tuberculosis include bone-marrow studies in 74 autopsied cases. The percentages of neutrophils and lymphocytes were found to fit the clinical picture in the majority of patients, confirming the well-known work of Medlar and others. Eosinophilia, often found in tuberculosis and probably indicating an allergic state, is discussed, and many references are given. The authoress believes that the monocyte-lymphocyte ratio is a poor index of subclinical activity and that the monocyte percentage in tuberculosis is so inconsistent that its significance is slight; however, she claims that the Arneth count of immature neutrophils is useful because in some cases of active tuberculosis there is a shift to the left without neutrophilia.

The 250 cases of anemia in her series were studied with hematocrit determinations and grouped according to Wintrobe's classification. There were 30 cases with macrocytic anemia, and some of these patients developed the anemia after collapse therapy. Such a macrocytic anemia can be a warning of a dangerous reduction of respiratory surface, steering the surgeon away from its further reduction by an irrevocable procedure like bilateral thoracoplasty. Most of the anemias were of the normocytic type.

Blood sedimentation and its history, mechanism, methods of determination and interpretation are well handled. She agrees with most observers that rapid sedimentation is an expression of tissue destruction and absorption, which explains the normal rate often found despite advancing disease in minimal cases. She prefers the Rourke–Ernstene method, with corrections based on hematocrit values, and the book includes a new table for making such corrections.

The Food You Eat: A practical guide to home nutrition. By Samuel and Violette Glasstone. 8°, cloth, 277 pp., with 14 illustrations. Norman, Oklahoma: University of Oklahoma Press, 1943. $2.25.

With points and ration stamps confusing the public, this book comes at an opportune time. Its purpose is to supply the lay reader with the present knowledge regarding nutrition that scientists have gathered, knowledge which is particularly important in these days of narrowing food choices.

The objective of the nutritionist, according to these authors, is as follows: "[To furnish] (1) a sufficient number of calories in the form of carbohydrates, proteins and fats; (2) the appropriate amount of high-quality protein; (3) an adequate proportion of the mineral elements . . .; (4) a plentiful contribution of vitamins; (5) sufficient fibrous material to provide roughage for stimulating movement in the large intestine; and (6) about two quarts of water in one form or another." Besides all this, "there should be an approximate balance between the foods which yield an alkaline residue and those leaving an acid residue." The book takes up these points in turn.

The reader's interest becomes deepened when he learns that the authors themselves became experimental subjects in proving the claims made for an economical yet nutritious diet. The first part of the book explains the individual substances required by the body and may be hard for the lay reader to peruse. A style somewhat more popular and intriguing might have helped here but if he dutifully reads through these chapters, he is rewarded with two most interesting chapters — "Food Products" and "Planning the Menu."

At the end of the book is an outline of "practical nutrition," which gives at a glance a daily food summary, a typical balanced menu, a budget for a moderate-cost diet and sources of various food elements and vitamins, together with charts showing the location of various cuts of meat. A good index concludes the book. Eighteen illustrations, many of tempting food dishes, make the book attractive. The paper is good, and the green binding restfully pleasing.

NOTICES

NEW ENGLAND PATHOLOGICAL SOCIETY

The first fall meeting of the New England Pathological Society will be held in the auditorium of the Boston University School of Medicine on Thursday, October 21, at 8:00 p.m.

PROGRAM

Immersion Foot and Allied Disorders. Dr. Carl K. Friedland.

Crush and Blast Injuries in Warfare. Dr. Stanley E. Bradley.

Aviation and Cardiovascular Disease. Dr. Robert W. Wilkins.

Physicians and medical students are cordially invited to attend.

POSTGRADUATE COURSES OF THE AMERICAN COLLEGE OF PHYSICIANS

The Advisory Committee on Postgraduate Courses of the American College of Physicians has arranged for two one-week and one two-week courses to be given this fall. These programs have been organized primarily for the fellows and associates of the college, but when facilities are available they will be open to those with adequate preliminary training who are now preparing to meet either the requirements for membership in the college or certification by the American Board of Internal Medicine. The registration fee for any course is $20 per week,

payable in advance, but all medical officers of the armed forces, who are cordially invited to attend, will be accorded remission of the fee.

The first course, to be held October 11 to 16 at the University of Illinois College of Medicine and the Presbyterian Hospital, Chicago, will cover all aspects of endocrinology. The second, to be held October 25 to 30 at the Roosevelt Hospital, New York City, concerns allergy and related topics. And the third, to be held November 8 to 19 at various Philadelphia medical institutions, will deal with many aspects of medicine, including psychosomatic medicine, allergy, syphilis, blood diseases, cardiovascular diseases, peripheral vascular disorders, arthritis and related conditions, gonorrhea, respiratory diseases, tuberculosis, gastrointestinal diseases, chemotherapy, diagnostic roentgenology, psychiatry, metabolic problems, tropical medicine, tumors and legal medicine.

Further details regarding these courses may be obtained from E. R. Loveland, Executive Secretary, American College of Physicians, 4200 Pine Street, Philadelphia 4.

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MEDICAL CONFERENCE PROGRAM

Wednesday, October 6 — The Diagnostic Points in Shoulder and Back Conditions. Dr. John D. Adams.
Friday, October 8 — Current Atypical Pneumonia. Dr. Maxwell Finland.
Wednesday, October 13 — Treatment of Burns and Burn Shock. Dr. Edward A. Cooney.
Friday, October 15 — Herniated Intervertebral Disks. Dr. James L. Poppen.
Wednesday, October 20 — A Study of Pernicious Anemia. Dr. H. K. Katz.
Friday, October 22 — Some Observations on Heart Murmurs. Dr. Samuel Levine.
Wednesday, October 27 — A Clinical Discussion of Granuloma Inguinale with Differential Diagnosis. Dr. F. M. Thurmon.
Friday, October 29 — Pulmonary Resection in the Treatment of Pulmonary Tuberculosis. Dr. Norman J. Wilson.

On Tuesday and Thursday mornings Dr. Thannhauser will give medical clinics on hospital cases.

FIFTIETH ANNIVERSARY OF TUFTS COLLEGE MEDICAL SCHOOL

The final day of the program of the fiftieth anniversary of Tufts College Medical School will be held on Wednesday, October 6, at 8 p.m., in the John Hancock Hall, 90 St. James Street, Boston.

The meeting will be opened by Mr. Harold E. Sweet, president of the Board of Trustees, Tufts College. Dr. Alonzo K. Paine, president, Tufts Medical Alumni Association, will preside. Dr. Karl T. Compton, president, Massachusetts Institute of Technology, will speak on the subject, "Some Evolutionary Trends in Professional Education." Captain A. Warren Stearns (MC), U.S.N.R., dean-on-leave, Tufts College Medical School, will give an address entitled, "In Retrospect." A presentation of the book *A History of Tufts College Medical School* by Dr. Benjamin Spector will be made by Dr. Louis E. Phaneuf,

(Notices continued on page xiii)

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*A New Type of Medication to Be Used in Bronchial Asthma and Other Allergic Conditions. *New England Journal of Medicine* 223:843–846, 1940.

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past-president of Tufts College Alumni Association and the Tufts Medical Alumni Association. Commander Bartholomew W. Hogan (MC), U.S.N., senior medical officer of the ill-fated Airplane Carrier *Wasp*, will speak on the subject, "Navy Medicine on the Home Front and in Combat Areas," and the final speaker will be Dr. Leonard Carmichael, president, Tufts College, whose subject is "Some Distinctive Characteristics of Medical Education at Tufts."

NEW ENGLAND HOSPITAL FOR WOMEN AND CHILDREN

The monthly clinical conference and meeting of the staff of the New England Hospital for Women and Children will be held on Thursday, October 7, at 7:15 p.m. in the classroom of the nurses' residence. Dr. Arthur Watkins will speak on "The Kenny Treatment of Poliomyelitis," and the talk will be illustrated with lantern slides. Dr. Madelaine R. Brown will be chairman.

SOCIETY MEETINGS AND CONFERENCES

Calendar of Boston District for the Week Beginning Thursday, October 7

Thursday, October 7

*9:00–10:00 a.m. Medical clinic. Dr. S. J. Thannhauser. Joseph H. Pratt Diagnostic Hospital.

7:15 p.m. The Kenny Treatment of Poliomyelitis. Dr. Arthur Watkins. New England Hospital for Women and Children.

Friday, October 8

*9:00–10:00 a.m. Current Atypical Pneumonia. Dr. Maxwell Finland. Joseph H. Pratt Diagnostic Hospital.

Saturday, October 9

*10:00–11:30 a.m. Medical staff rounds. Peter Bent Brigham Hospital.

Monday, October 11

*12:15–1:15 p.m. Clinicopathological conference. Peter Bent Brigham Hospital.

Tuesday, October 12

*9:00–10:00 a.m. Medical clinic. Dr. S. J. Thannhauser. Joseph H. Pratt Diagnostic Hospital.

*12:15–1:15 p.m. Clinicoroentgenological conference. Peter Bent Brigham Hospital.

2:00–4:00 p.m. Myasthenia gravis clinic. Out Patient Department, Massachusetts General Hospital.

Wednesday, October 13

*9:00–10:00 a.m. Treatment of Burns and Burn Shock. Dr. Edward A. Cooney. Joseph H. Pratt Diagnostic Hospital.

*12:00 m. Clinicopathological conference. Children's Hospital.

*Open to the medical profession.

October 6–29. Joseph H. Pratt Diagnostic Hospital. Medical conference program. Page ix.

October 11. Cancer Symposium. Page 493, issue of September 16.

October 11–16. Postgraduate Courses of the American College of Physicians. All aspects of endocrinology. University of Illinois College of Medicine and the Presbyterian Hospital, Chicago. Page 570.

October 11–22. 1943 Graduate Fortnight of the New York Academy of Medicine. Page 32, issue of July 1.

October 14. Inhalation Therapy in Serious Respiratory Disease. Dr. Maurice S. Segal. Pentucket Association of Physicians. 8:30 p.m. Haverhill.

October 21. New England Pathological Society. Page 570.

October 21–23. Association of Military Surgeons of the United States. Page x, issue of September 2.

October 25–30. Postgraduate Courses of the American College of Physicians. Allergy and related topics. Roosevelt Hospital, New York City. Page 570.

November 8–19. Postgraduate Courses of the American College of Physicians. The course will deal with many aspects of medicine and will be held at various Philadelphia medical institutions. Page 570.

District Medical Societies

SUFFOLK

December 2. Censors' meeting. Page x, issue of September 16.

WORCESTER

October 13. Blood Bank Night, City Hospital, Worcester.
November 10. Navy Night, Bancroft Hotel, Worcester.
December 8. Worcester City Hospital.
January 12, 1944. Memorial Hospital, Worcester.
February 9. Worcester State Hospital, Worcester.
March 8. St. Vincent Hospital, Worcester.
April 12. Hahnemann Hospital, Worcester.
May 10. Annual Meeting.

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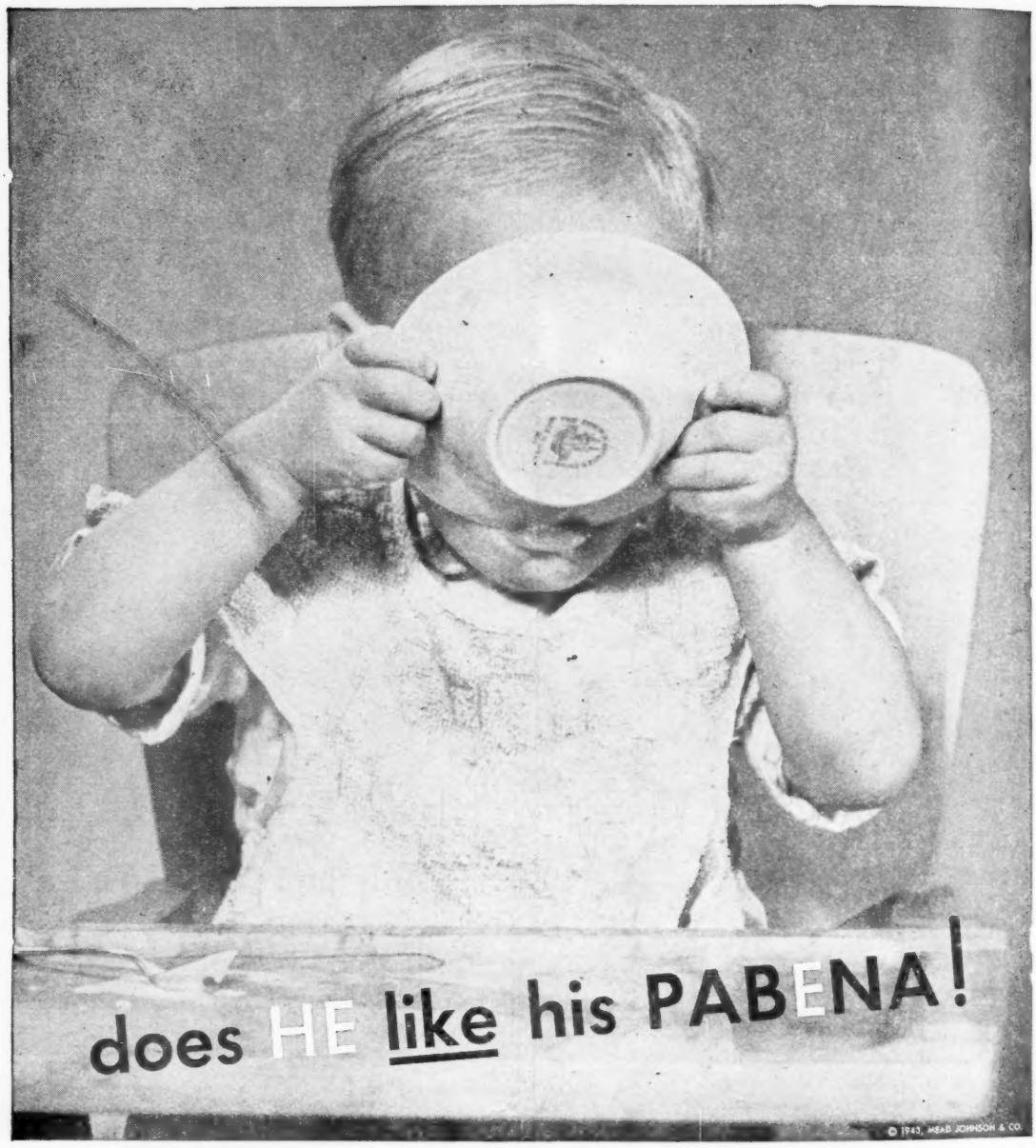
For information: consult the Medical Superintendent
Telephones: HAN 1750 and 1751



WHEN interviewed between platefuls, this 11-months-old young man emphatically stated: "I have been brought up on Pablum and still like it, but some days when I'm in the mood for oatmeal, nothing satisfies me like Pabena!"

Nutritious, quick and easy to prepare, both products are for sale at drug stores.

MEAD JOHNSON & COMPANY, EVANSVILLE, IND., U.S.A.